

DESA Working Paper No. 34

ST/ESA/2006/DWP/34

September 2006

Developing and Transition Economies in the Late 20th Century: Diverging Growth Rates, Economic Structures, and Sources of Demand

Codrina Rada and Lance Taylor

Abstract

This study reviews the growth and development performance of developing countries in the latter part of the 20th century. Sustained growth among “successful” countries was accompanied by structural change in terms of output and labour share shifts, trade diversification, sustained productivity growth with some strong reallocation effects due to movements of labour from low to high productivity sectors. Neither the widely accepted “twin deficits” nor the “consumption-smoothing” behaviour views of macro adjustment seem to apply, though macroeconomic flexibility may be very important. Finally, neither human capital accumulation nor foreign direct investment are sufficient, by themselves, to stimulate growth.

JEL Classification: O11, O57

Keywords: economic development, structural change, comparative studies, development policy

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Developing and Transition Economies in the Late 20th Century: Diverging Growth Rates, Economic Structures, and Sources of Demand

*Codrina Rada and Lance Taylor*¹

This study is about the growth and development performance of non-industrialized countries in the latter part of the twentieth century, in particular about a “great divergence” of their growth rates of per capita Gross Domestic Product (GDP) since around 1980. Our goal is to explore the factors underlying this pattern, and trace out plausible lines of causation for its diversity. The analysis follows Kuznets (1966) in attempting to organize the data in such a way as to highlight salient relationships, or the lack thereof, among key economic variables.

Changes in growth trends and widening income inequality among developing countries and between developed and most developing countries coincided with important changes in views on economic policies. A major shift occurred worldwide after the 1970s and 1980s when, under the tutelage of World Bank and International Monetary Fund (IMF), most developing countries moved to liberalize their external current and capital accounts along with domestic labour and financial markets. They also privatized public enterprises, de-emphasized industrial policy interventions, and encouraged a greater private sector role in general. Emphasis was placed on supply-side “accumulation” processes, for physical and human capital and foreign direct investment (FDI). Fiscal austerity figured in many programs sponsored by the Bretton Woods Institutions. More than a quarter of a century has passed since the first versions of IMF and World Bank macro reforms became the conventional wisdom. Data are now available for a long enough time to enable policy analysts to sort their implications out.

At best, the new orientation had mixed results in either reversing the slowdown in growth that many countries encountered in the last quarter of the twentieth century (details below) or helping them break away from their poverty and low level development traps (Taylor, 2001 and 2006; Vos and others, 2002). Indeed, income gaps have widened over time.

We begin by investigating economic evolution for the period 1970-2003, studying several indicators to see how they relate to the growth or non-growth of per capita GDP. The policy background is then brought in, with emphasis on ideas emanating from the Bretton Woods institutions. Suggestions are offered about other approaches to policy that may help generate more sustained and equitable development than has been the case in the recent past.

To keep the discussion within bounds, the data are organized in terms of 12 regional groups including 57 developing and transition countries: rapidly growing East Asian economies (or the “Tigers”), Southeast Asia, China, South Asia, semi-industrialized “Latin America” (including South Africa and Turkey with economic structures similar to their counterparts in the Western Hemisphere), the Andean countries, Central America and the Caribbean, Central and Eastern Europe, Russia and Ukraine representing the former USSR, “representative” and “other” countries in sub-Saharan Africa², and the Middle East. The nations in each group are listed in Appendix I.

1 Research support from DESA and the Ford Foundation and suggestions by José Antonio Ocampo, Jomo K. S., and Rob Vos are gratefully acknowledged.

2 The representative group is made up of four countries often discussed in the development literature, and the others are included essentially on grounds of data availability.

Divergence in the 20th Century

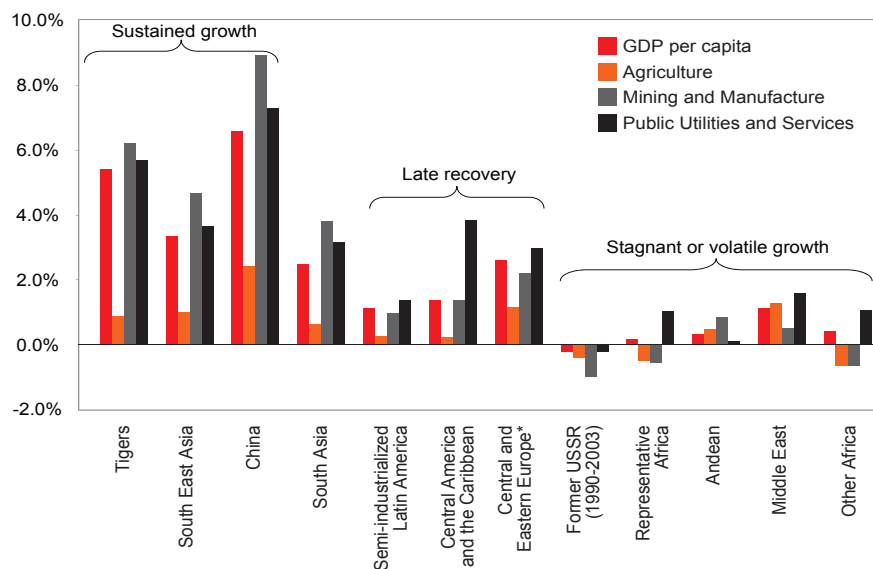
To set the discussion Figure 1 shows the GDP and sectoral per capita output growth rates by region in constant 1990 US dollars.³ We identify three cohorts of regions and countries that had similar patterns of growth:

There was *sustained growth* in the Tigers, China, Southeast Asia, and South Asia (dominated by India). Relative to the other regions, South Asia had less robust expansion and Southeast Asia did not bounce back as strongly from the 1997 crisis as did the Tigers. These regions “diverged upwardly” from the rest of the developing world.

The second, *late recovery* group includes semi-industrialized Latin America, Central America and Caribbean, and Central and Eastern Europe. All the regions showed somewhat faster growth late in the century, although formerly socialist Europe is in an ambiguous situation. Over the period 1970–2003 it grew slightly faster in per capita terms than South Asia (2.7 per cent vs. 2.6 per cent per year) but because of the transition shock around 1990 it seemed more appropriate to call its case one of “late recovery.”

Finally, the two African regions with other Africa dominated by Nigeria, the Andean group, the Middle East, and Russia and Ukraine were either *stagnant* throughout the period or experienced volatile economic expansion. Data for the last decade suggest that Representative Africa and Russia and Ukraine have been enjoying growth which if it continues could advance them into the late recovery group.

Figure 1:
Sectoral growth rates, 1970–2003



Source: World Development Indicators 2005 database.

3 It is customary to make international income comparisons in terms of purchasing power parity (or PPP). However, as explained in Appendix II, PPP estimates distort the macroeconomic relationships that are at the heart of our analysis. When it comes to policy formation, it is far more useful to think about macro relationships in traditional “real” terms.

Identifying Structural Change

Sustained growth in successful regions was associated with changes in economic structure in several dimensions. The slow growers did *not* generate such changes. Economists trained in the structuralist tradition hold that development requires economic transformation or the “ability of an economy to constantly generate new dynamic activities” (Ocampo, 2005) characterized by higher productivity and increasing returns to scale. Our evidence supports this point of view. Recognizing the structural shifts that occurred in the regions with sustained growth can help chart future directions that other developing economies may be able to take. Needless to say, any economy is a unique entity with its own characteristics that require its own policies. But stylized facts show that there are dynamic movements of key macro variables that show up in connection with sustained output growth across different economic systems.

In this paper, we analyze these movements from several angles, in terms of formalized decomposition exercises (algebraic details in Appendix II) and more informal analysis of data on foreign trade patterns, human capital accumulation, and FDI.

One decomposition breaks down labour productivity growth between agricultural, industrial, and service sectors. Overall productivity growth comes out as an average of own-rates of growth, weighted by output shares, for all sectors along with “reallocation effects” which are positive for sectors with relatively low average productivity in which employment falls or for high-productivity sectors in which employment rises.⁴

A second exercise focuses on growth rates of the economy-wide employment to population ratio which is decomposed into an average of growth rates of the ratio by sectors weighted by employment shares. At both the national and sectoral levels, the ratio of employment to total population will rise if the growth rate of output per capita exceeds growth of labour productivity.⁵ An economy can be considered to be performing well if it has both sustained productivity growth and a stable or rising employment-population ratio.

Thirdly, we examine the association between capital stock and output growth. We also contrast growth rates of labour and capital productivity and ask how they feed into widely used but fundamentally misleading calculations of “total factor productivity growth.” The two inputs’ productivity growth rates turn out to be linked by a simple accounting identity, which helps explain the “Asian” pattern of falling capital productivity over time.

Finally, we look at net borrowing flows—incomes minus expenditures—over time for the government, private, and rest of the world “institutional sectors”, normalized by GDP.⁶ As an accounting identity, borrowings must sum to zero:

$$(Private\ investment—saving) + (Public\ spending—taxes) + (Exports—Imports) = 0,$$

with a positive entry indicating that a sector is a net contributor to effective demand. Changing sectoral roles in this equation can be important aspects of the growth process. For example, as shown in section 10, mutually offsetting co-movements of government and foreign net borrowing occurred sporadically at most. In other words, the widely accepted “twin deficits” view of macro adjustment does not seem to apply. Nor

4 The approach follows Syrquin (1986).

5 The original insight is from Pasinetti (1981).

6 The approach followed here is a variant on a demand decomposition proposed by Godley and Cripps (1983).

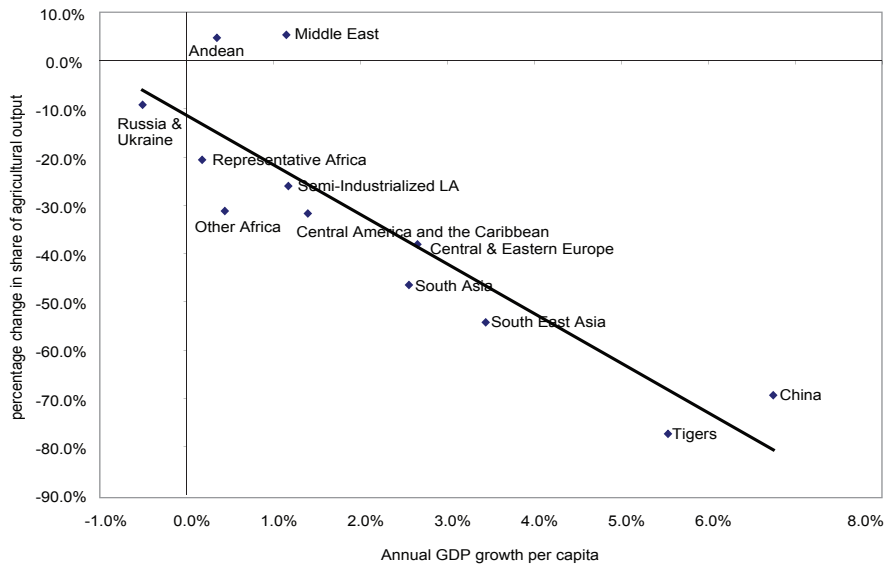
do the data suggest that “consumption-smoothing” behaviour—an important feature of mainstream Ricardian equivalence growth theory -- is empirically relevant. Macroeconomic flexibility, on the other hand, may be very important. Strong fluctuations in private and foreign net borrowing did not derail growth in the upwardly diverging Tigers and, to a lesser extent, Southeast Asia.

Output Growth Patterns

The contrast in Figure 1 between Asia and Eastern Europe and the other regions is striking. The Asian regions (even South Asia) had very high growth rates in industry. Service sector growth was strong in Central and Eastern Europe and, to a lesser extent, in Latin America and Central American and the Caribbean.

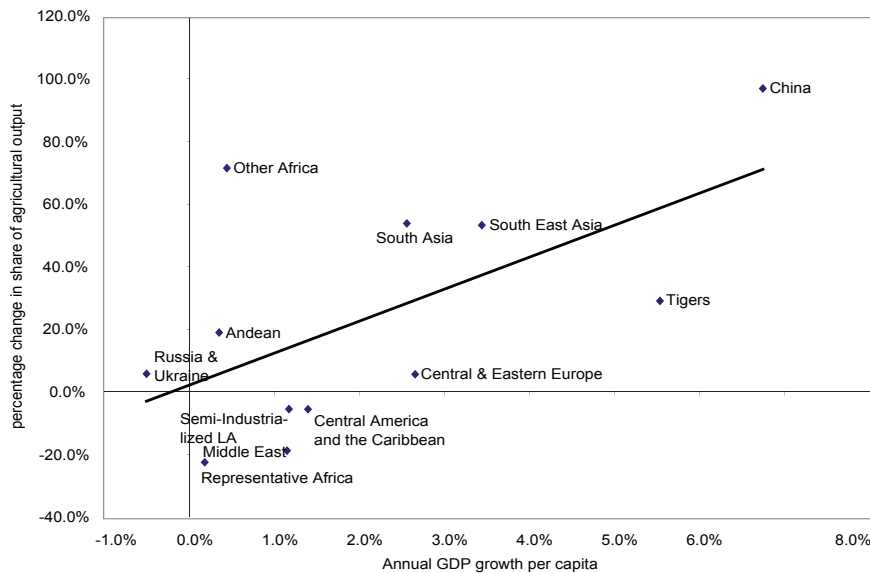
Figures 2-4 present scatter plots of per capita GDP growth in the agriculture and industry vs. the

Figure 2:
Growth performance and structural change in agriculture, 1970-2003



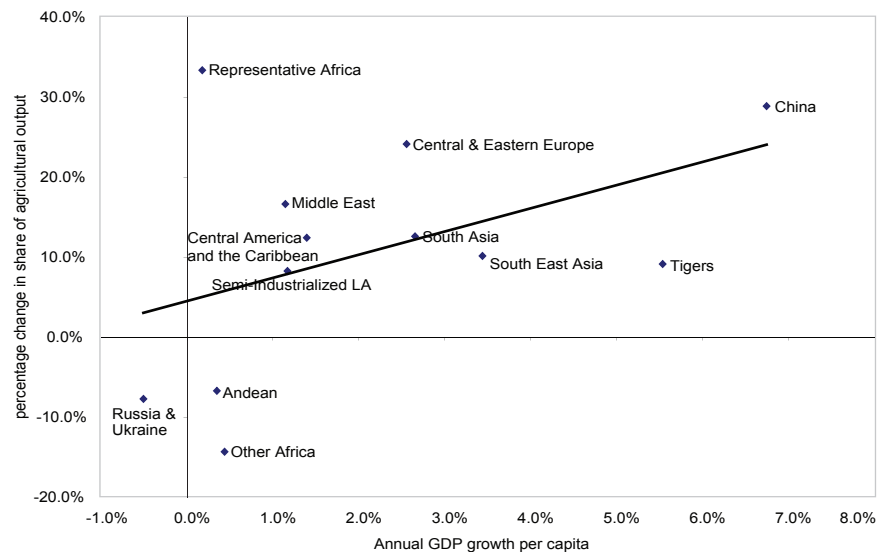
Source: World Development Indicators 2005 database.

Figure 3:
Growth performance and structural change in industry, 1970-2003



Source: World Development Indicators 2005 database.

Figure 4:
**Growth performance and structural change
 in the service sector, 1970-2003**



Sources: UN National Accounts

percentage changes in their respective sectoral shares (again 1970-2003). The rapidly growing Asian countries identified in Figure 1 showed substantial shifts in shares, in the classic movement from primary toward secondary and tertiary sectors.

Figure 2 for the agricultural share shows a negatively sloped regression line for the whole 12-region sample. But contrast the results for the five fast-growing regions with those for the others. While the former show a clear relationship between faster output growth and a decreasing share, the lagging seven regions generate a random scatter—a result that will repeat itself for several other indicators of structural change. Among the rapid growers, China's agricultural share fell by an astonishing 34 percentage points over the period. In South and Southeast Asia, agriculture saw its output share decline 19 and 17 percentage points respectively. The rising agricultural shares in the Andean and Middle Eastern regions are anomalous as is the decrease accompanied by negative growth in Russia and Ukraine.

Similar observations apply to the industrial sector and service sectors with clear associations emerging for the rapid growers and ill-defined data clouds for the other regions. Growth is associated with structural change and the absence of growth is not.

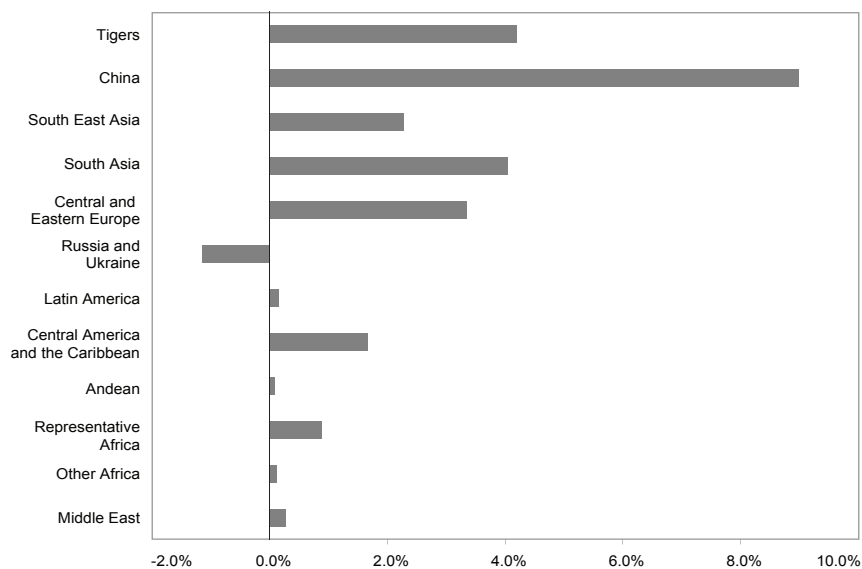
The growing regions had rising industrial shares as can be observed in Figure 3 (less so in Central and Eastern Europe which prior to 1970 had already been pushed toward industrial specialization). Four slow growers suffered long-term deindustrialization, while the industrial share in Russia and Ukraine scarcely budged. Big shifts in industrial shares in the Middle East and other Africa (with Nigeria as the largest economy included) were driven by developments in the petroleum sector.

The fast growers had predictable increases in the service sector share in figure 4. The Tiger region service share rose to 64 percent by 2003, and supported strong job creation as reported below. There was no apparent relationship for the lagging regions.

Labour Productivity Growth

Historically, labour productivity increases have been the major contributing factor to growth in real GDP per capita. At the same time, faster productivity increases cut into employment growth unless they are offset by rising effective demand. Figure 5 shows overall productivity growth for the period 1991-2003/4. The five rapidly growing regions had productivity growth rates exceeding—some greatly exceeding—the rich country norm of two per cent per year. The others fell well short, and the former USSR had negative productivity growth.

Figure 5:
Overall Labour Productivity Growth: 1991-2003/4



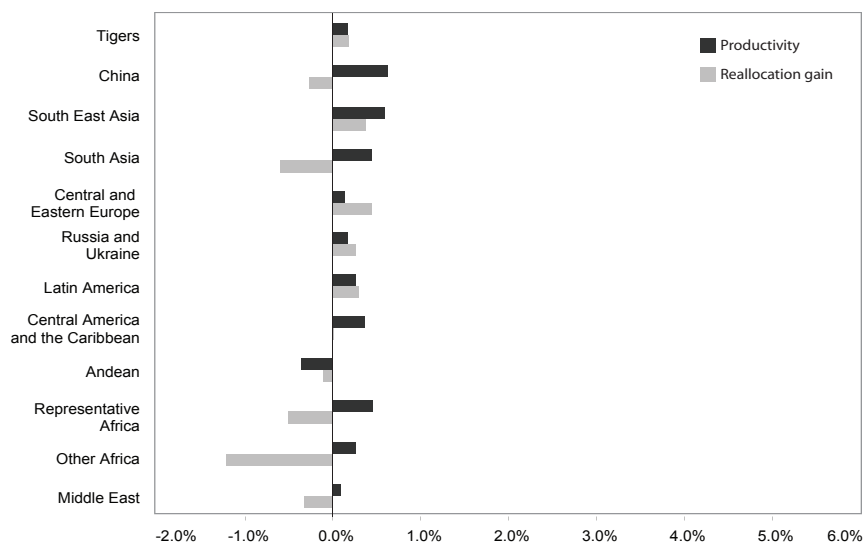
Sources: International Labour Office, GET database, for employment and World Bank, *World Development Indicators 2005* database, for output.

In terms of phasing over time, more detailed results (not presented here) show that Russia/Ukraine suffered an enormous productivity collapse (-9.7 per cent per year) in 1991-1995, but then recovered to 5.6 per cent (1999-2003). Central and Eastern Europe showed a similar though far less violent pattern. The Tiger region rapidly recovered its productivity growth rate of 4-5 per cent per year after the 1997 Asian crisis. Southeast Asia also had 4-5 per cent annual productivity growth prior to the 1997, but rates tailed off thereafter. The other regions had growth rate fluctuations over time but no clear trends.

Figures 6-8 summarize direct and reallocation contributions by sector to overall productivity increases. Agriculture in Figure 6 evidently did not play a crucial role in the process. In several countries agriculture's reallocation effects were negative. The meaning is that this sector, with its relatively low average productivity, had positive employment growth. This finding is not surprising in countries such as China, South Asia, and Africa where agriculture's share in total employment is significant but the result is slightly discordant in the Middle East.

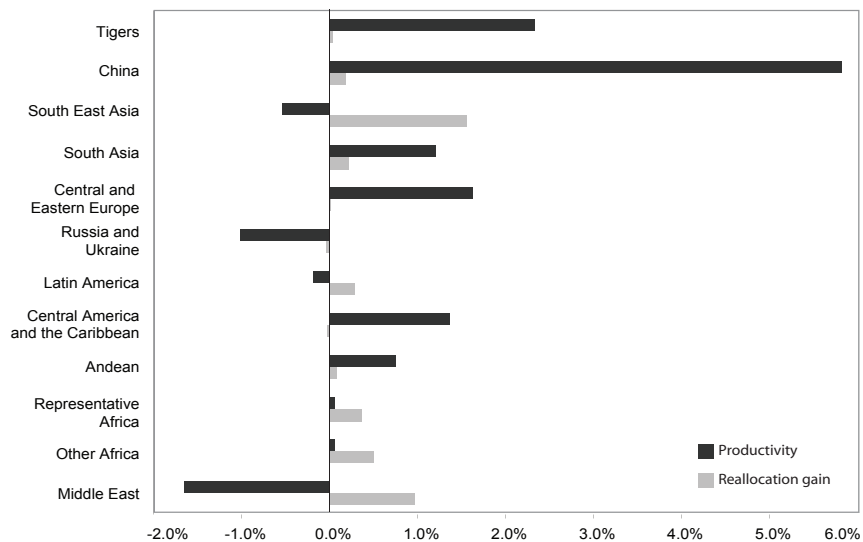
The industrial sector's own productivity growth made a substantial contribution to the total in four of the rapidly growing regions (Figure 7) and there was a strong reallocation contribution in Southeast Asia, the outlier. The direct contribution of nearly six per cent per year in China is striking. Industry made a visible contribution in the two poorer Western Hemisphere regions but detracted from overall performance in Russia and Ukraine and the Middle East, with the latter gaining from reallocation.

Figure 6:
Contribution of agriculture sector
to productivity growth: 1991-2003/4



Sources: International Labour Office, GET database, for employment and World Bank, *World Development Indicators 2005* database, for output.

Figure 7:
Contribution of industrial sector
to productivity growth: 1991-2003/4



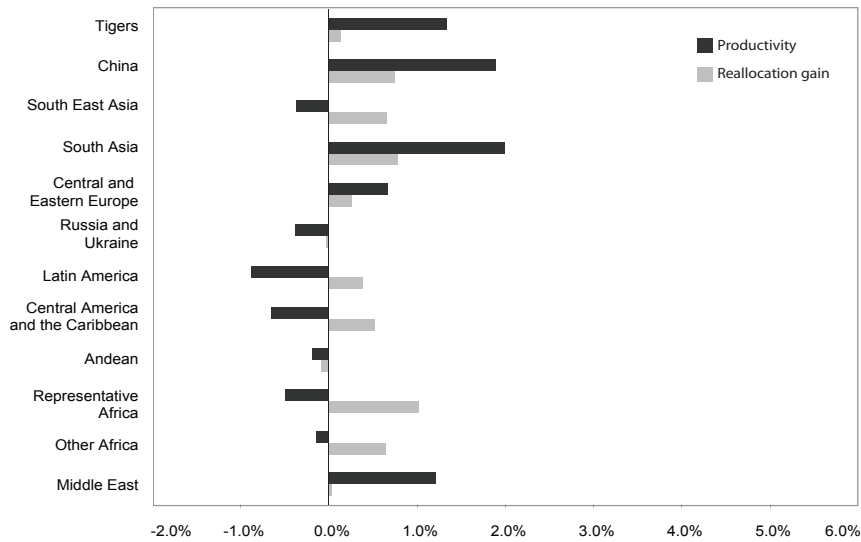
Sources: International Labour Office, GET database, for employment and World Bank, *World Development Indicators 2005* database, for output.

Services in Figure 8 also added to the total in the rapid growers: as with industry, a negative direct but positive reallocation contribution in Southeast Asia. In other regions, the direct contribution from services was typically negative with modest positive contributions from reallocation. This distinction among regions has implications for job creation, as taken up below.

Finally, from an alternative data set we were able to do decompositions for the period 1980-2000 for the four Asian regions, with 1986 as the starting year for South Asia. The results are in Figure 9. The same general pattern holds as in Figures 6-8, with services playing a more important role in the Tigers.

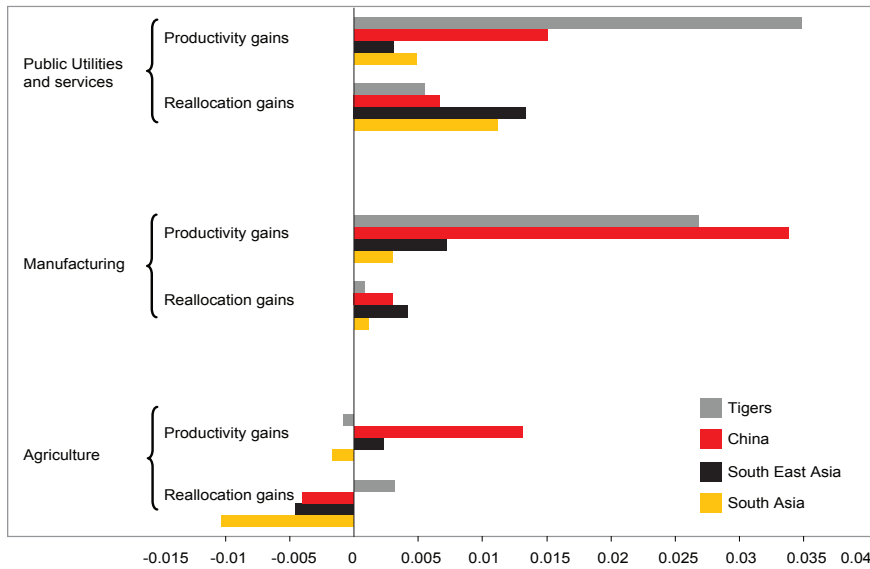
The bottom line on productivity growth is that the two non-agricultural sectors made solid contributions to the total in the fast-growing regions, even as their overall importance in the economy rose.

Figure 8:
Contribution of service sector to productivity growth: 1991-2003/4



Sources: International Labour Office, GET database, for employment and World Bank, *World Development Indicators 2005* database, for output.

Figure 9:
Productivity decomposition for selected Asian regions: 1980(6)-2000



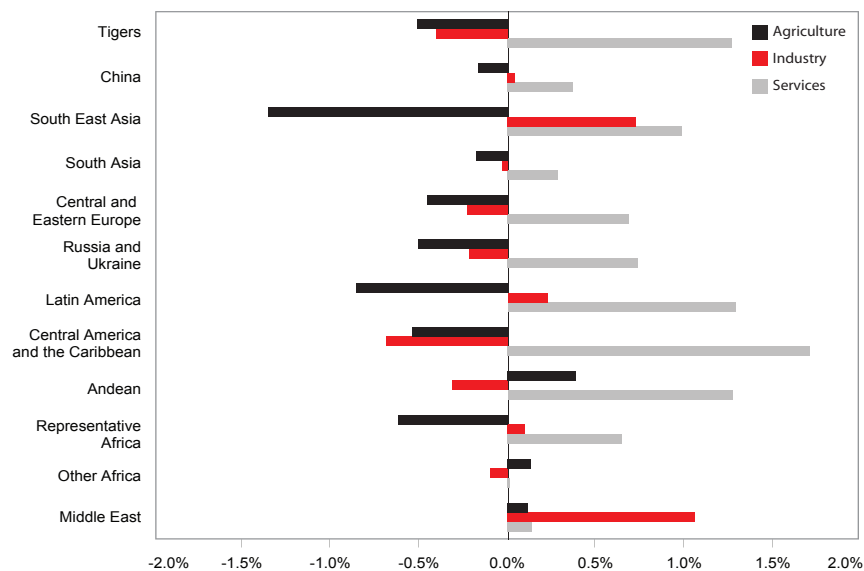
Sources: Employment data is from the International Centre for the Study of East Asian Development <http://www.icsead.or.jp>. Data for sectoral output is from UN National Accounts database.

Elsewhere the results were a mixed bag, with no clear patterns emerging. Insofar as it is measured by average labour productivity growth, technological advance was evident in the growing regions and absent or, at best, sporadically present in other corners of the world.

Employment Growth Patterns

Figure 10 summarizes our results regarding shifts in sectoral employment to population ratios in terms of their contributions to changes in the ratio economy-wide. Regional growth rates of the overall ratio hovered around zero, with more positive than negative values. As noted above, at both the sectoral and national levels, the ratio(s)

Figure 10:
Sectoral shifts in employment/population ratios: 1991-2003/4



Sources: International Labour Office, GET database, for employment and World Bank, *World Development Indicators 2005* database, for output.

will grow when the growth rate of output per capita exceeds labour productivity growth. The ratio(s) will also tend to rise when population growth is negative, as was the case in Eastern Europe and the former Soviet Union.

The most striking outcome in Figure 10 is the apparent *similarity* of all 12 regions in the sense that services showed a rising employment to output ratio everywhere, rather strongly except in Other Africa, the Middle East, and (to an extent) South Asia. The details, however, differed between fast- and slow-growing regions.

For the rapid growers, the positive contribution of services to employment growth shows that output per capita grew faster than the sector's rising productivity levels that underlie its positive contributions to growth overall (darker bars in Figure 8). Positive reallocation gains were due to the fact that services have relatively high average productivity. In the slower growing regions, direct contributions of services to economy-wide productivity were weak but rising demand still created jobs. Productivity did not increase rapidly within the sector but via reallocation effects the shifts in employment toward it (reflected in Figure 10) added to overall productivity growth.

Relative to total population, agriculture was a source of employable labour in nine regions, very strongly in Southeast Asia, and a sink only in the Middle East, Other Africa, and (especially) in the Andean region. Only in the Middle East and Southeast Asia was the industrial sector a strong provider of jobs (a fact explaining Southeast Asian industry's strong reallocation contribution to overall productivity growth in Figure 7). Consistent with Figures 1 and 7, industry's rate of productivity growth tended to exceed its growth in demand per capita. An old structuralist observation in development economics is that the industrial sector is the main motor for productivity increases but not for job creation.

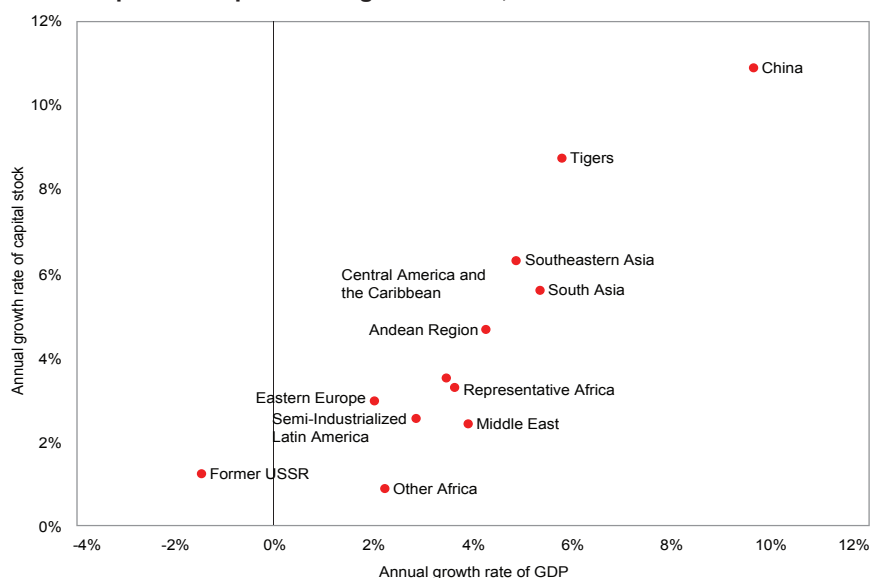
Capital Productivity and Total Factor Productivity Growth (TFPG)

The next topic is the role of capital accumulation in growth. We computed capital stock growth rates for the regions by cumulating real gross fixed capital formation over time from a postulated initial level of the capital stock (capital-output ratio of 2.5) with a depreciation rate of 0.05. As discussed more fully in Appen-

dix II, after a decade or two such estimates of the capital growth rate should be insensitive to the parameters because capital stock growth tends to converge to investment growth over time.⁷

Figure 11 compares growth rates of output and the capital stock. In contrast to most other indicators discussed herein, there is a clear positive association between the two growth rates across *all* regions—a

Figure 11:
Output and capital stock growth rates, 1990-2004



Sources: GFCF and GDP data comes from *World Development Indicators 2005* database.

standard empirical result. This relationship is usually thought to emerge from the supply side as discussed immediately below, but it also could be attributed to demand. In a simple model based on effective demand, if investment grows at a certain rate then output and (as just indicated) the capital stock will ultimately grow at that rate as well. The fact that the slope of the putative relationship between the two growth rates in Figure 11 is close to one argues more for a demand- than supply-side story. In the latter, the slope would exceed 45 degrees, with a less than one-for-one partial impact of faster capital growth on output growth.⁸

Also note that the capital growth rate exceeded output growth in the Tigers, China, Southeast Asia and the former USSR. These regions had *falling* capital productivity. Such an outcome can be expected in the rapidly growing Asian regions where industrial restructuring took place towards capital-intensive industries. Nevertheless these findings can also be said to be the outcome of accounting requirements. As demonstrated in Appendix II, the difference between labour and capital productivity growth rates must be equal to the difference between capital and labour growth rates as a “theorem of accounting”. If capital grows faster than labour, then labour productivity has to grow faster than capital productivity.⁹ If the capital to labour ratio rises very rapidly, then capital productivity growth may even have to be negative. This outcome is some-

7 A caveat: our capital stock series for the former-USSR and Eastern Europe begin in 1990, which means that the estimated growth rates are less reliable than those for other regions where the base year was 1970.

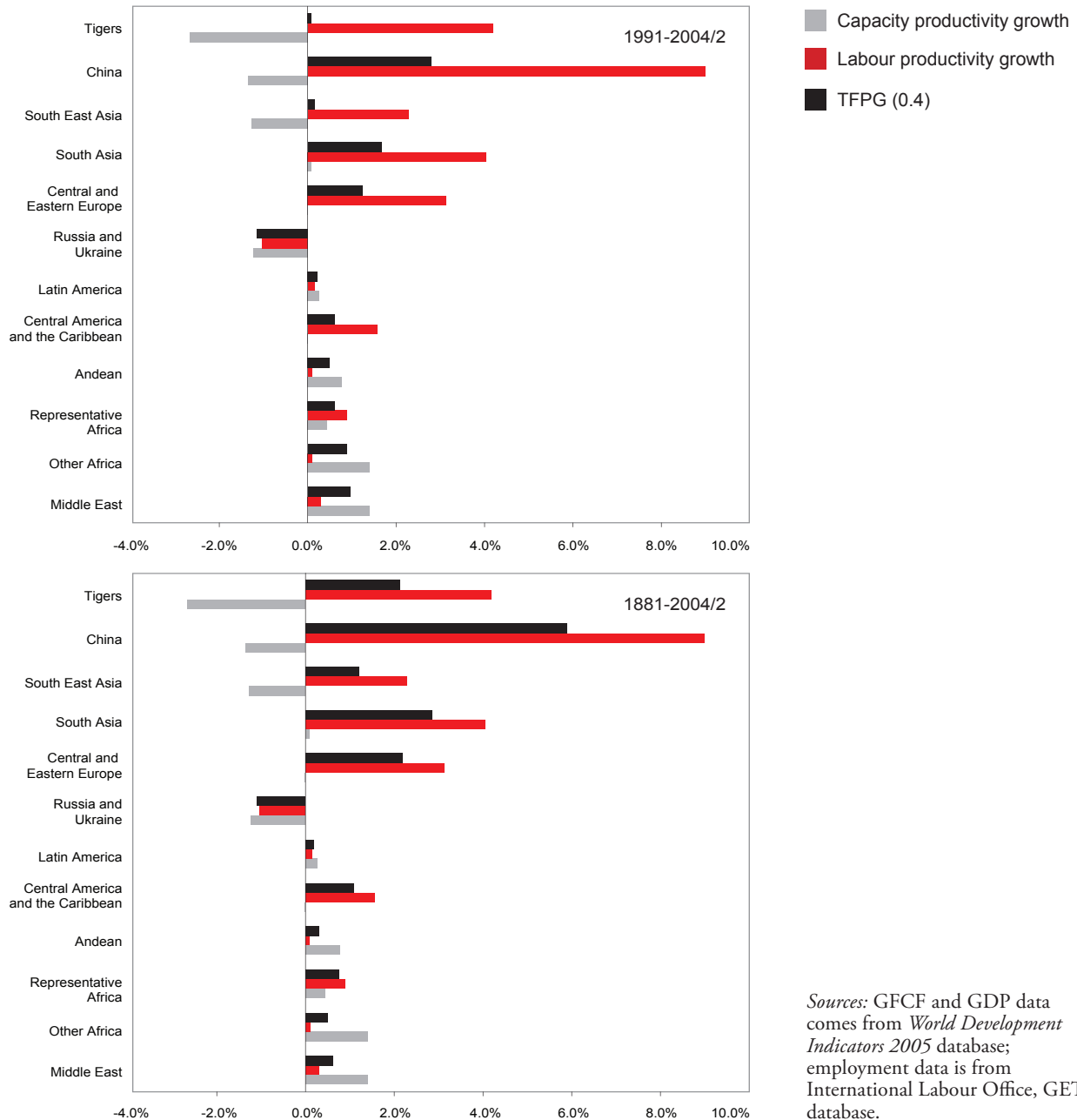
8 That is, the 45-degree slope would not fit a neoclassical aggregate production function. It could be “explained” by a constant capital-output ratio, but that in turn is inconsistent with the “Asian” pattern of falling capital productivity discussed immediately below.

9 This sort of “decreasing returns” to more capital is built into many mainstream and heterodox growth models, which mostly serve to rationalize the accounting identity described in the text.

times said to characterize an “Asian” pattern of growth, or a “Marx bias” in technical progress. It can also result from negative labour force growth as in the former USSR and Eastern Europe.

Capital and labour productivity growth rates are plotted in Figure 12. Again note the contrast between regions. The rapid growers all had negative or nearly zero capital productivity growth rates and rising labour productivity which could have resulted from better technology “embodied” in new capital goods. Detailed data show that China’s capital productivity fell more rapidly over time. The former USSR lost on both fronts and the rest had small, mostly positive, growth of both indicators.

Figure 12:
Capital and labour productivity growth rates and TFPG



Sources: GFCF and GDP data comes from *World Development Indicators 2005* database; employment data is from International Labour Office, GET database.

Instead of asking whether capital stock growth impacts directly on labour productivity (a question we could not directly address with our data set), much of the productivity literature focuses on “total factor productivity growth” (TFPG) or the “residual.” TFPG turns out to be a weighted average of labour and capital productivity growth rates, with the weights being the labour and non-labour income shares of value-added at factor cost. The question then becomes: what is the labour share? In developing countries, the share of *remunerated* labour income in GDP is likely to be less than 40 per cent. Most economically active people are not paid wages but rather toil within unincorporated proprietorships such as urban petty commerce, as labourers on peasant farms etc. The market value of their work must be imputed in one way or another, with all the calculations being extremely dubious.

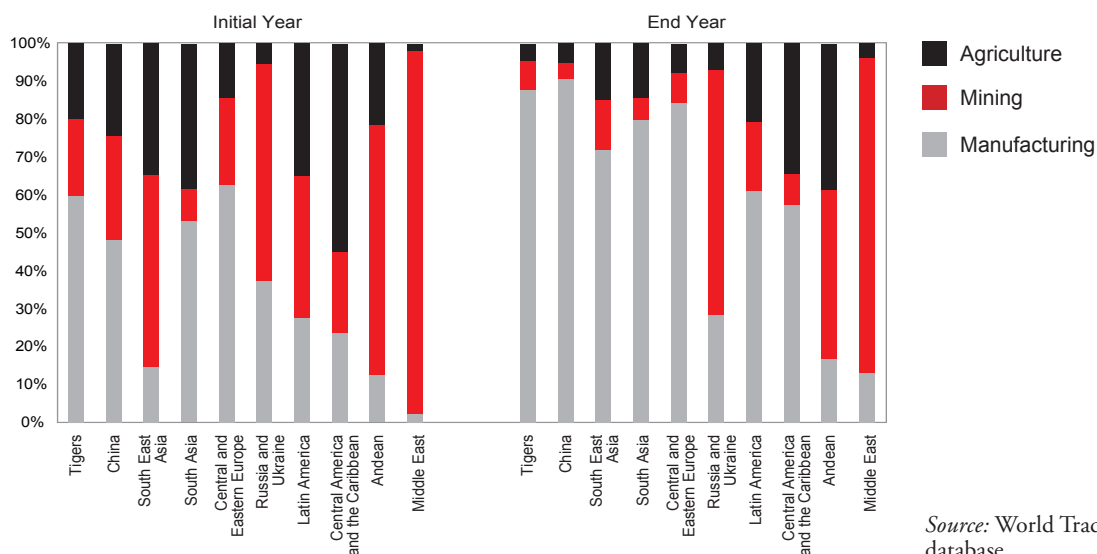
Figure 12 shows estimates of TFPG for labour shares of 0.4 (realistic?) and 0.7 (the standard number) respectively. Either way, because of their negative capital productivity growth, TFPG in the rapidly growing regions fell well short of labour productivity growth. For the lower labour share, TFPG in the Tigers and Southeast Asia was close to zero. Such findings are often used to portray the failings of the “Asian model,” but mostly they reflect an accounting identity and the arbitrary nature of the TFPG indicator.

Diversification of Trade

Regional diversity persists when we take up changes in patterns of foreign trade which accompany structural changes of the economy. We examine the technological composition of exports and changes in sectoral composition of exports and imports. For the sake of space we present visually only the changes in sectoral composition of exports in Figure 13.¹⁰

Fast-growing regions generally had increases in the shares of manufactured exports. The same trend is observed in the composition of imports with manufactures taking a greater role in regions such as Southeast Asia in which assembly operations are important. The rapid growers typically also had rising technological content of exports, the most impressive being the Tigers where high-tech exports represented 48 per cent of total exports in 2002 compared to 16 per cent two decades before. Technological upgrading was less evi-

Figure 13:
Composition of exports by commodity, initial year and end year



Source: World Trade Organization database.

¹⁰ The initial and final years for export compositions are 1980 and the early 2000s.

dent in slow-growing regions. In fact several slow growers such as the Andeans maintained or even enhanced traditional patterns of specialization in mining products and/or agriculture.

Human Capital (Education)

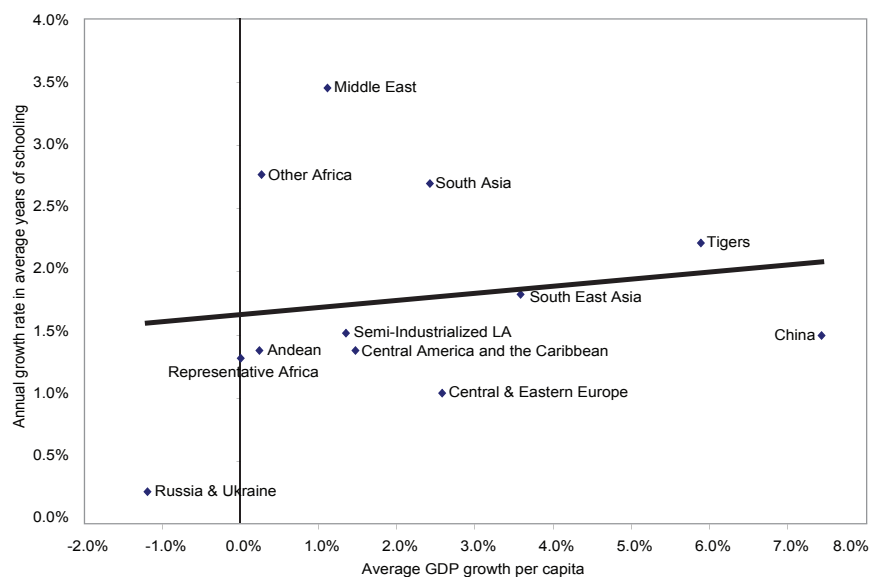
Mixed results also come out with regard to accumulation of human capital, which we measure by average years of schooling. The output growth rates summarized in Figure 1 have no clear connection at the regional and country level with more education because all regions raised their levels, some quite substantially. In 2000, the highest attained levels of education by far were in the Tigers, Eastern Europe, and the core of the former USSR with 9-10 average years of schooling and skilled workers making up about 2/3 of the labour force. The lowest were in Africa with slightly more than three average years of schooling. Other Africa's numbers were somewhat better than in the representative region.

How about relationships between *growth* in education and output? Figure 14 presents a scatter plot of GDP growth per capita vs. growth in average years of schooling. The regression line shows a putative positive relationship between output expansion and educational growth, but it really only holds for the fast-growing regions, and not that strongly for Central and Eastern Europe and South Asia. As in Figures 2-4, and in contrast to the picture for physical capital accumulation in Figure 11, the slow-growing regions inhabit an amorphous data cloud. They did no worse at accumulating human capital than the others but they saw scant returns in growth. Education is a public good that should be supported for many reasons, but over the medium run its contribution to more rapid real income growth appears to be weak. More human capital may be a necessary or an enabling condition for sustained output growth, but it is clearly not sufficient.

Foreign Direct Investment

Foreign Direct Investment (FDI) is often touted as a potential source of technologically upgraded physical capital and managerial know-how more generally. But it is not obvious what level of FDI is "significant". As a share of GDP, for example, how large does it have to be or how rapidly should it grow to generate important repercussions on output growth?

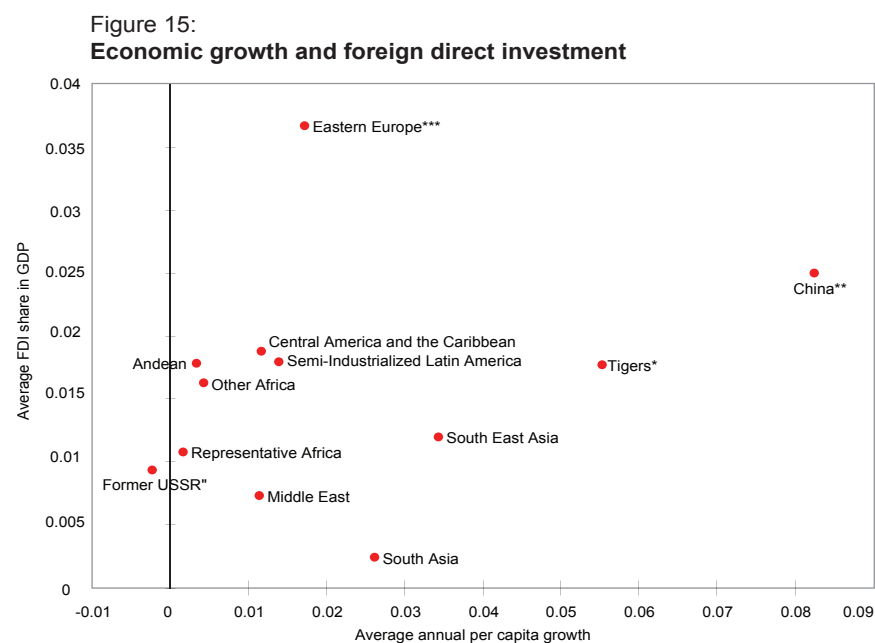
Figure 14:
Economic growth and educational improvements, 1970-2000



Sources: Data on education is from Barro and Lee (2000) <http://www.cid.harvard.edu/ciddata/ciddata.html>; data on growth rates of GDP per capita is from UN National Accounts.

FDI also tends to fluctuate over time. As a share of GDP between 1970 and 2001, it went from 1.6 per cent to 3 per cent (1997) to 3.1 per cent (2004) in the Tigers. Somewhat similar patterns appeared in Southeast Asia and China. FDI/GDP in South Asia peaked at 0.9 per cent in 1997, fell back, and then up to 0.8 per cent in 2004. Aside from South Asia, the rapidly growing economies received some inflows, with China absorbing a very substantial share of the worldwide total. Eastern Europe resembled Eastern Asia in seeing the FDI share of GDP rise from 0.4 per cent in 1990 to 4.8 per cent in 2000 and 4 per cent in 2004. Russia received relatively little FDI: it peaked at 1.7 per cent of GDP in 1999. Central America and the Caribbean had strong fluctuations—nearly 4 per cent in the 1970s down to 0.4 per cent in 1982, back to above 4 per cent in the 1990s with the assembly/tourism boom, and then some decline. Latin America saw two per cent toward the end of the period. Some members of the slow-growing group of economies did little worse than the fast-growers in garnering FDI, without a lot of apparent pay-off. The Andes were up to 5.5 per cent in 1993 and 3 per cent in 2004, with no positive impact on growth. Africa and the Middle East got negligible quantities of FDI.

Figure 15 shows a scatter of per capita growth rates vs. shares of FDI in GDP. A positively sloped relationship shows up for Asia, as usual. The remaining regions demonstrate their usual blob of data points. A relatively large FDI inflow may possibly have a slightly stronger association than rising education with growth, but the relationship is still very weak.



Source: UNCTAD *Handbook of statistics, 2005*.

Open economies and their patterns of net borrowing

Next, we take up interactions between demand and supply. The focus is on the balance of payments, often the fulcrum for both short- and long-term limitations on growth in developing economies. There are at least three incompatible contemporary doctrines regarding how open macro-economies operate. Twin deficits (TD) and Ricardian equivalence (RE) dogmata are widely spread in mainstream literature, while development and heterodox economists often favour a structural gap (SG) explanation of external balance.

In development macroeconomics, the twin deficits hypothesis traces back at least to the IMF economist Jacques Polak's (1957) blueprint for the "financial programming" exercises that to this day are the linchpin of the Fund's stabilization packages worldwide. The recipe for action is to cut the fiscal deficit, which is supposed to improve the economy's external position. Polak, of course, was drawing on a long tradition of monetarist analysis of the balance of payments. In one variant, unless the private sector chooses to increase its saving—or, more precisely, reduce its net borrowing as discussed below—then a higher fiscal deficit must be paid for by domestic money creation. Aggregate demand consequently goes up. Under tacit assumptions that all resources are fully employed and the domestic price level is tied to foreign prices by arbitrage in foreign trade (purchasing power parity or PPP applies), the higher demand has to spill over into a bigger trade deficit.

Ricardian equivalence (Barro, 1974) emerges from dynamic optimal savings models postulating that all resources are fully employed and that households smooth their consumption (or, more generally, expenditure) over time. It plays a far more central role in contemporary mainstream macroeconomics than Polak's somewhat dated monetarism¹¹. Along the lines of Say's Law, RE broadly asserts that a change in fiscal net borrowing will be offset by an equal shift in private net lending. In an open economy context, any one country's external position then has to be determined by inter-temporal trade-offs between consumption and saving with all countries in the world producing the same good (Obstfeld and Rogoff, 1997). In this context, traditional counter-cyclical fiscal policy does not play a role.

However, TD and RE stories are not compatible because they assign different roles to private and foreign net borrowing. Under TD, private borrowing is "neutral" in that it does not respond to shifts in the foreign or fiscal positions. Under RE, the current account is neutral with regard to fiscal shifts while private and government borrowing dance the trade-offs.

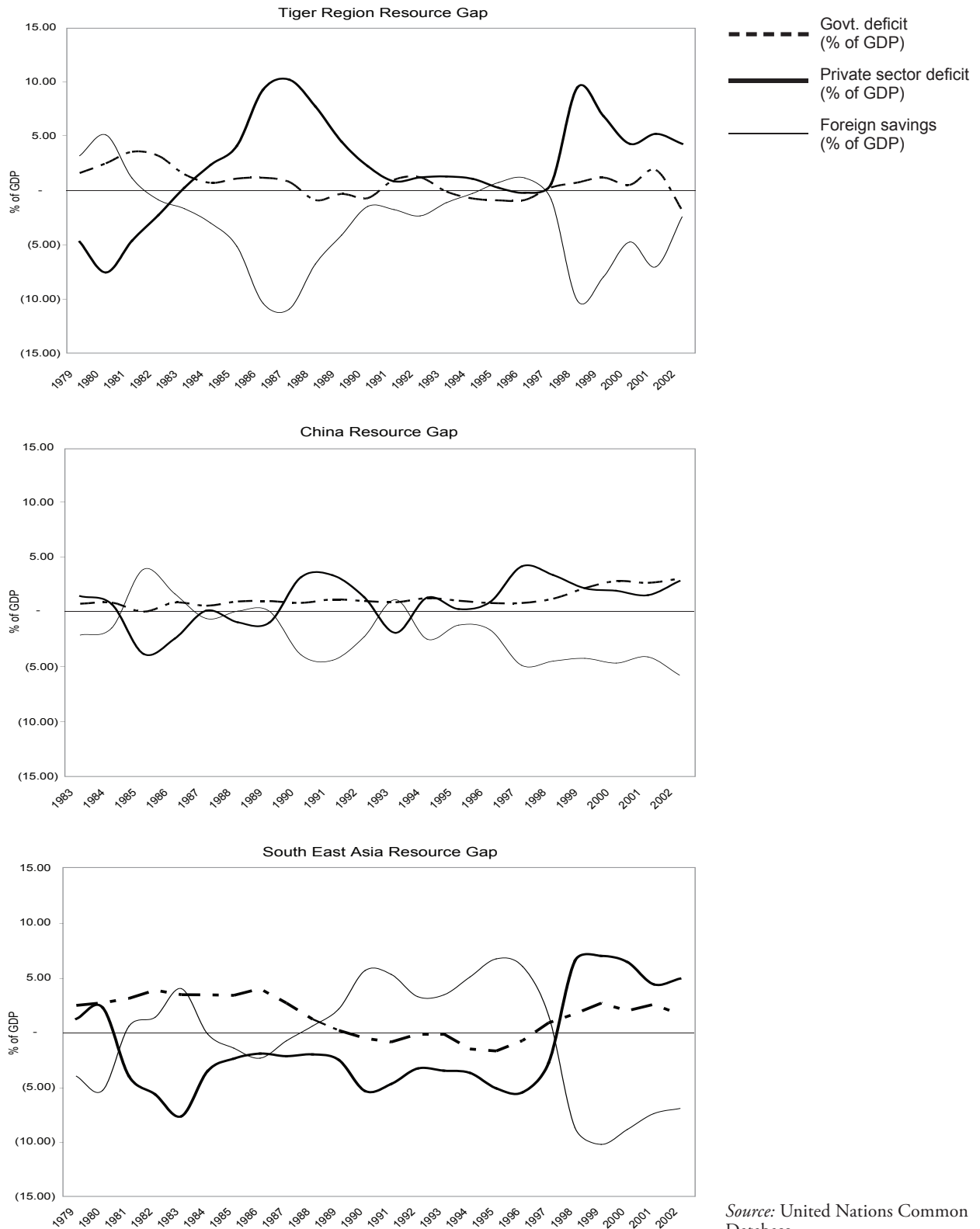
Finally, causality can also be interpreted as running the other way—from the foreign to the fiscal and/or private sector financial gap. Perhaps the external deficit is "structural" and will persist in the face of plausible domestic policy changes. In this sense, structure is built into foreign trade. Within "reasonable" ranges of real exchange rate values and the level of economic activity, the trade deficit—or surplus, say for China or Germany—will not change by very much. It need not be close to zero because of lacking or excess competitiveness of domestic producing sectors.

SG analysis resembles full employment RE in that its binding external gap imposes a supply constraint on the system. Particularly in a developing country context, the question becomes how does effective demand adjust to meet the commodity supply permitted by available imports? To hold demand stable, any shift in the private or public sector net borrowing position has to be reflected into an offsetting change in the other domestic gap, as under RE. Mechanisms that can make this happen are sketched below. If private net borrowing is neutral, then fiscal deficit will reflect a shift in the external gap: TD with causality reversed. It becomes interesting to see what patterns emerge from the data.

Several borrowing styles can be identified. In the Asian regions in Figure 16, the fiscal role was rather passive, with major adjustments taking place between private and foreign net borrowing. The private and foreign co-movements were relatively large, with swings up and down exceeding 10 per cent of GDP in the Tigers and Southeast Asia. Big reductions in external deficits were forced from abroad in the 1997 crisis,

11 Although, as we will see below, Polak sans PPP can help explain recent interactions between public and private sector deficits in several developing regions.

Figure 16:
Resource gaps by institutional sectors in the Tigers, China and South East Asia

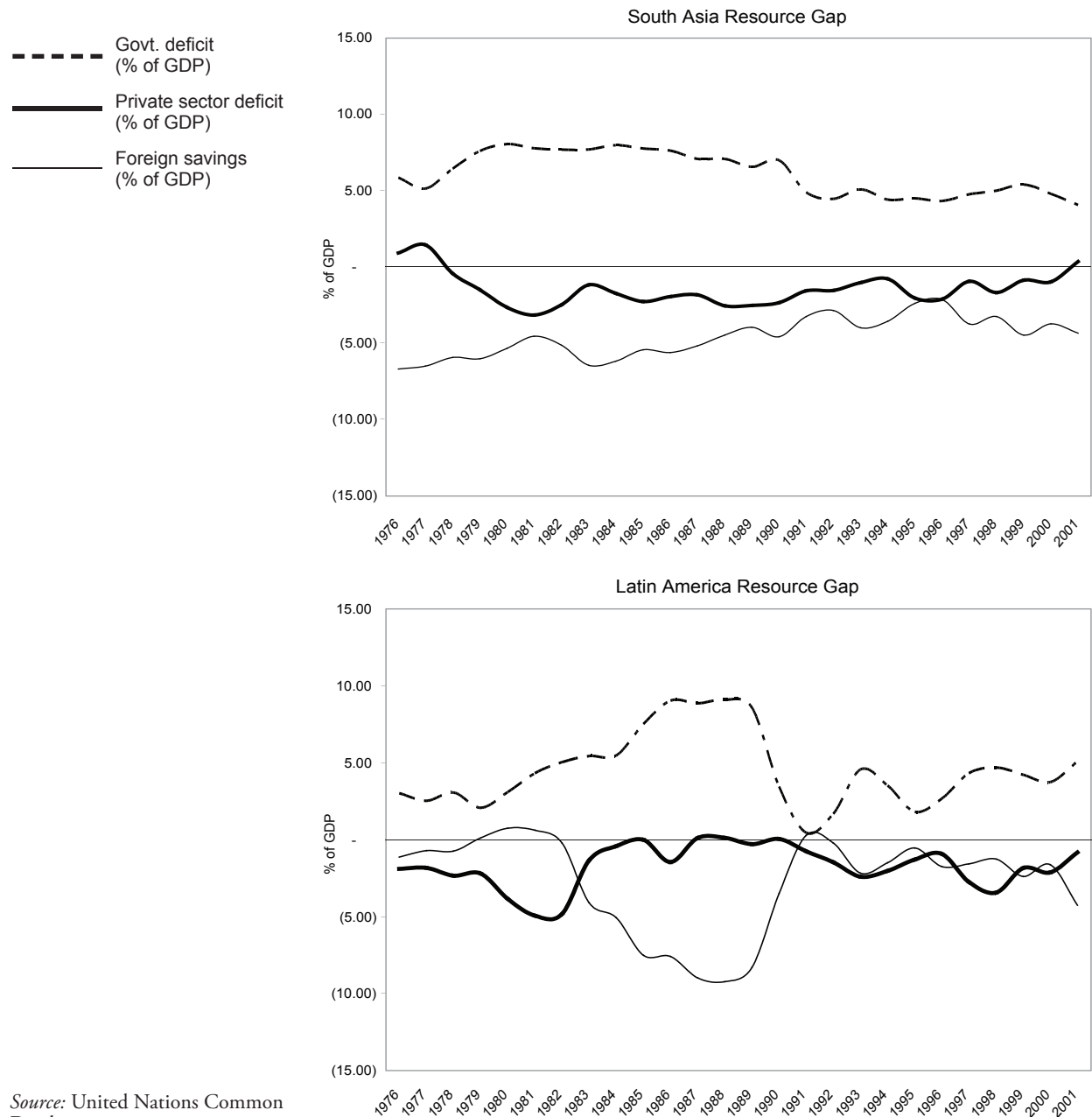


Source: United Nations Common Database.

but upswings tended to be associated with falling private saving and rising import propensities. Maintaining very high per capita income growth over a 25-year period with the macro economy subject to such extreme fluctuations is a feat perhaps unprecedented historically.

Figure 17 shows the history for two regions with persistently high levels of government net borrowing—rapidly growing South Asia and economically stagnant middle income Latin America. South Asia’s private net lending share resembles China’s, except that the private surplus financed a fiscal deficit while China’s

Figure 17:
**Resource gaps by institutional sectors in
 South Asia and semi-industrialized Latin America**

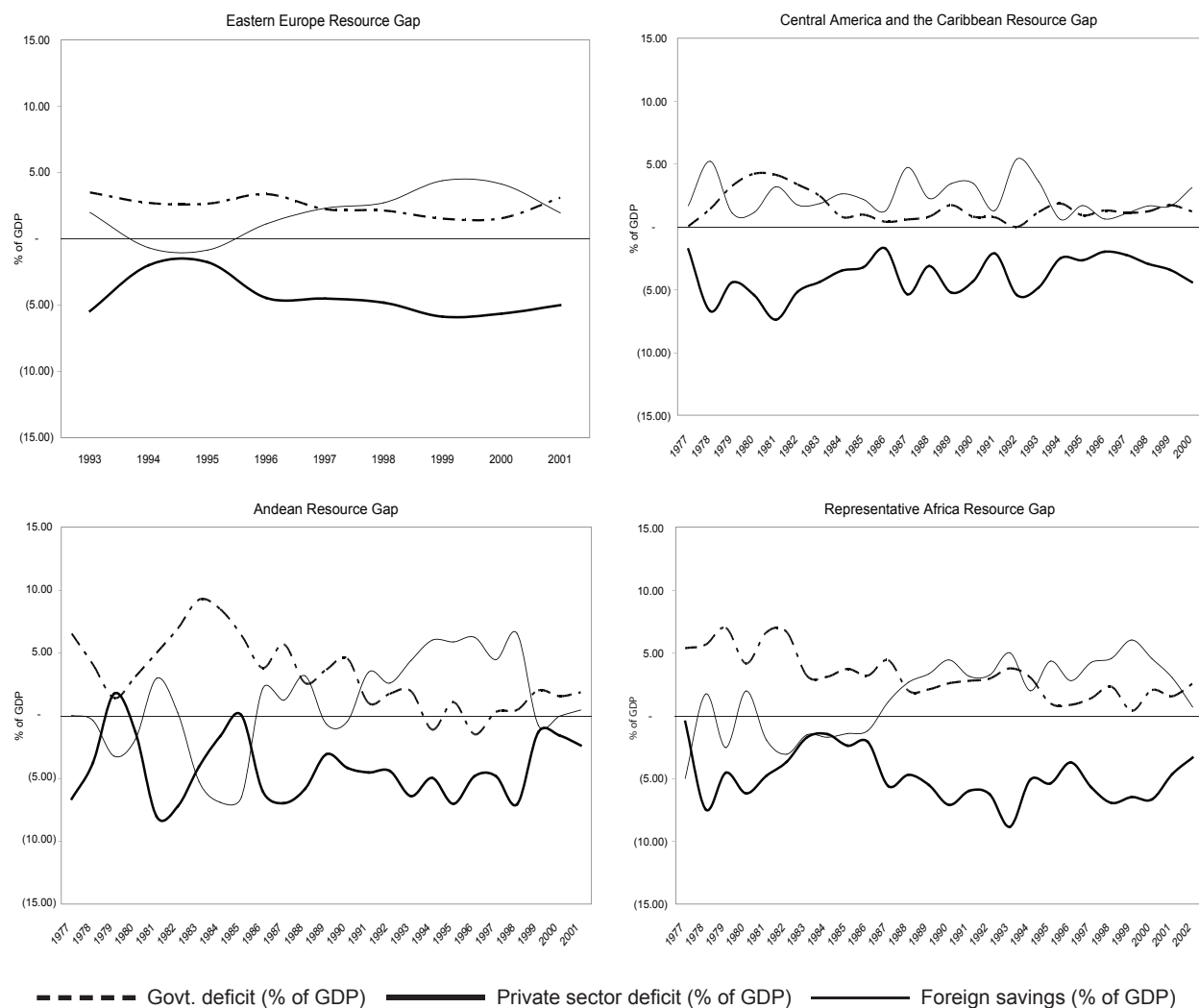


Source: United Nations Common Database.

external account was in surplus. The large fiscal deficit (largely driven by India) did not create an equally large external gap because along SG lines hard currency was not available (until very recently) to pay for expanded imports. The private sector was the only possible source of finance for the government's net borrowing. Except for the latter part of the recessionary "lost decade" of the 1980s, Latin America appeared to have a more or less structural external deficit. Note the wide offsetting swings in the government and private borrowing flows along East Asian lines, unfortunately associated with a long period of economic stagnation as opposed to the other region's rapid growth. A massive dose of fiscal austerity in the late 1980s courtesy of the IMF had a very modest impact on the external deficit but was met by increased private borrowing, in a pattern that later partially reversed.

In Figure 18, the Andean economies, Central America and the Caribbean, Eastern Europe, and representative Africa appear to have structural external deficits. In all cases the fiscal deficit was cut back (in the

Figure 18:
**Resource gaps by institutional sectors in Central and Eastern Europe,
 Central America and the Caribbean, Andean region and Representative Africa**



Source: United Nations Common Database.

1980s in Latin America and Africa and the 1990s in Eastern Europe) as IMF-sponsored stabilization programs were wheeled into place. Rather than reductions in external deficits, there were increases in the private net borrowing, with subsequent oscillations between private and government positions.

Finally in Figure 19, in the Middle East from around 1980 until the mid-1990s, a trend reduction in the fiscal deficit was accompanied by a falling foreign deficit. A similar pattern showed up in the former-USSR after the mid-1990s. In both regions, the “structural” factor was almost certainly the external position, with the fiscal accounts accommodating. In other words improvements in the fiscal position as in Russia/Ukraine and the Middle East were probably driven by a better balance of payments, rather than the opposite. The ex-Soviet private sector was a net lender, while private net borrowing rose in the Middle East. The pattern in the African region, dominated by Nigeria is less clear with apparent co-movements of private and foreign borrowing.

Crowding-out of private demand by higher public demand under a binding external constraint that holds output roughly constant is a familiar story. Harking back to Polak’s monetarist stance, if prices are *not* stabilized by PPP then they may begin to rise in response to higher effective demand. Inflation tax and forced saving mechanisms can kick in, reducing real demand by the private sector (Taylor, 2004). In Figures 17 and 18, such processes also appeared to work in reverse. Austerity relaxed the squeeze on the private sector, and its demand went up by enough to keep output close to the limit imposed by a structural external gap.

With regard to RE, there is scant evidence suggesting the presence of consumption-smoothing in the sense of rising private sector net lending in response to higher output. In four of the five rapidly growing regions, private net borrowing went up as a share of GDP and net lending fell during periods of sustained, rapid growth. The exception is China after the mid-1980s, but there it is at least plausible to argue that the rising external surplus drove the observed rise in private net lending than the reverse.

The Policy Background

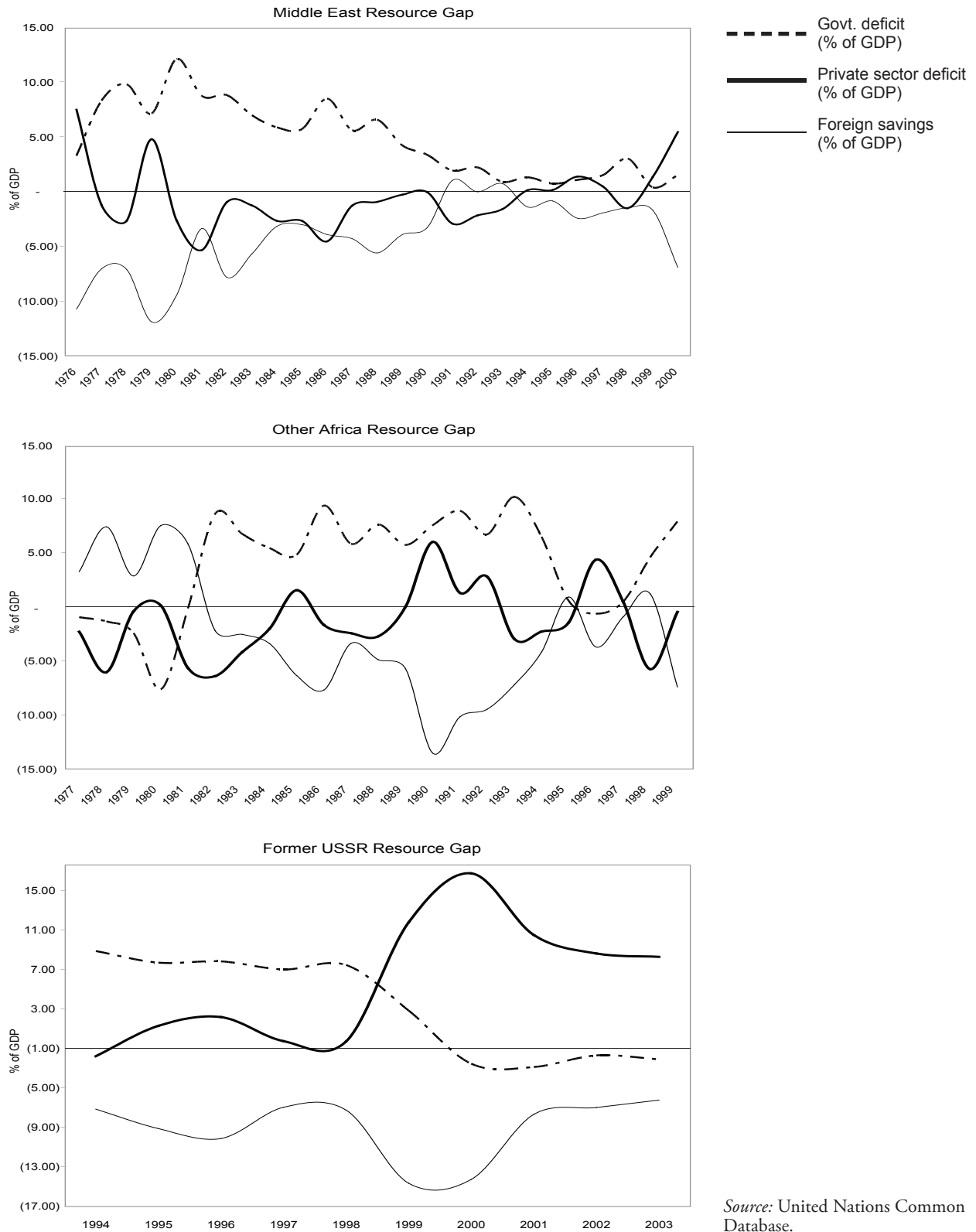
As noted at the outset, a major policy shift occurred worldwide beginning in the 1970s and 1980s—a move on the part of most countries to deregulate or liberalize their external current and capital accounts along with domestic labour and financial markets. Our empirical results help trace out its implications.

As Figure 1 illustrates, growth performances deteriorated after 1980 in many parts of the world. Clear success cases at the country level—various Tigers, China, Vietnam in Southeast Asia, and more recently India—are scarcely paragons of neo-liberalism. Some Eastern European policy-makers think of themselves in that way but many vestiges of the old order remain.

Moreover, the fact that structural change in several dimensions—output and labour share shifts, trade diversification, sustained productivity growth with strong reallocation effects in some cases—showed up strongly in the fast-growing economies, and sporadically elsewhere, carry an implicit message that intelligent sector-level policies can facilitate the development process. To an extent, structural change can be planned.

In macro terms, austerity was supposed to lead to improvement in external balances along IMF financial programming lines. The decompositions described just above show clearly that was not the common outcome. Even falling government deficits and rising external surpluses in the Middle East and Russia

Figure 19:
Resource gaps by institutional sectors in the Middle East, Other Africa and former USSR



Source: United Nations Common Database.

are better explained from the external than domestic side. More typical were co-movements of private and government or, less frequently, private and foreign borrowing flows. These patterns have to be examined in terms of the specific macro behaviour of each economy concerned.

Macroeconomic flexibility, although difficult to define and probably even harder to attain, also appears to be important. Witness the wide swings in net borrowing flows between 1980 and 2000 in the Tigers and Southeast Asia. Through it all, they continued to grow.

Stated goals of the liberalization package were to enhance labour productivity and employment growth. Outside the consistently expanding economies, this did not happen. Productivity movements across sectors differed in detail across slow-growing and stagnant regions but did not add up to very much. Employment to population ratios rose in the Andean and Middle Eastern regions.¹² Elsewhere, liberalization did not help create jobs—industrial jobs in particular.

Privatization and financial deregulation were followed by financial crises in many countries, sometimes more than once. They were associated with vulnerability and under-regulation of the financial sector which promoted speculative behaviour on both sides of the market. National balance sheets became dangerously short on foreign assets and long on domestic holdings including real estate and equity—usually newly created through privatization—and cycles of real exchange rate appreciation. The crises help explain the erratic performances in Latin America, Eastern Europe, and Russia. As noted above, Southeast Asia did not recover as strongly as the Tigers from the 1997 crisis. China and India to a large extent evaded its impacts by maintaining capital controls.

Finally, the supply-side emphasis of the new policy package—austerity supposedly leading to higher saving and investment rates, an emphasis on human capital accumulation, and opening economies to foreign direct investment—did not seem to bear fruit outside the rapidly growing regions. There was a clear association between capital stock growth and output growth across all regions, but here the supply-side interpretation is not compelling. The results in Figure 10 can just as well be explained by rapid capital stock growth contributing to labour productivity growth and driving output growth from the side of demand with savings adjusting endogenously, rather than by higher savings leading to more capital which fed into output via some sort of aggregate production function.

Results across the regions *differed*. Fast-growing regions were less zealous about applying the liberalization philosophy, and performed better. Elsewhere, there was enough variety to suggest that specific aspects of each region and its economies were important in shaping outcomes. *Structure matters*. The policy analysis challenge is to figure out just how and why.

How Should Policy Change?

An idea tracing back to Adam Smith and recently restated by Reinert (2006) and formalized by Rada (2006) is that the economy can usefully be viewed as a combination of dynamic increasing returns sectors and more plodding constant or decreasing returns activities. The goal is to stimulate the former while shifting resources, especially labour, from the latter. Figures 2 through 9 illustrate how the rapidly growing regions succeeded at this task. The question is how to design policies that will facilitate similar processes elsewhere.

12 A rise of the ratio in Russia/Ukraine can be discounted because of negative population growth.

Indeed, charting institutional changes that could open up degrees of freedom for the pursuit of developmentalist policies may be a fruitful approach. Some examples:

Does the open economy “trilemma” really bind? That is, can independent monetary/fiscal policies, exchange rate programming, and open capital markets all be combined? In the land of textbooks it is straightforward to show that they can be, or in other words that the Mundell-Fleming “duality” between a floating exchange rate and control of the money supply does not exist. In principle, a central bank principle has enough tools at its disposal to control monetary aggregates and interest rates regardless of the forces determining the exchange rate.¹³

In practice, however, arbitrary changes in monetary and exchange rate policies may be attacked by markets. As emphasized by Nayyar (2005), the question then becomes one of how other policies may be deployed to widen the boundaries on feasible manoeuvres. Frenkel and Taylor (2006) argue that under appropriate circumstances a weak exchange rate can be desirable for developmentalist reasons. The “circumstances” include a productive sector which is responsive to price signals; a monetary authority willing and able to maintain a weak rate for an extended period of time, perhaps supported by capital market and other interventions); and, political willingness to bear the, conceivably high, initial costs of devaluation including potential inflation and output contraction. Getting away from the recent obsession with using the exchange rate for “inflation targeting” could be a useful step toward making it a more useful development policy tool.

In the area of industrial and commercial policy, the impact of the WTO has been to rule out interventions involving tariffs and trade while up to a point different forms of subsidies (witness Airbus vs. Boeing!) are still considered kosher. How can developing and transition economies operate effectively in this new environment? The Smithian prescription to stimulate increasing returns sectors did not cease to apply when the WTO was born. The question is how to implement it under present circumstances.

At the macro level, a question implicit in Figure 9 is also relevant: how can economies avoid the “jobless growth” that has been characteristic of the liberalization period? Evidently, productivity growth must be positive for per capita incomes to rise but demand growth must be stronger to create employment. It remains to be seen in many countries whether they will be able to program rapid growth in demand under a regime of liberalized international capital markets.

13 For the gory textbook details see Chapter 10 in Taylor (2004). Frenkel and Taylor (2006) present a more institutionally nuanced discussion.

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Appendix I: Countries in the Regional Groups

1. Representative Africa: Ghana, Kenya, Uganda and Tanzania
2. Other Africa: Cameroon, Ethiopia, Ivory Coast, Mozambique, Nigeria, Zimbabwe
3. Central America and the Caribbean: Costa Rica, Dominican Republic, El Salvador, Guatemala, Jamaica
4. Andean Region: Bolivia, Ecuador, Peru
5. Semi-Industrialized Latin America (with Turkey and South Africa as additions): Argentina, Brazil, Chile, Colombia, Mexico, Venezuela, Turkey, South Africa
6. South Asia: Bangladesh, India, Pakistan, Sri Lanka
7. China
8. Southeast Asia: Indonesia, Philippines, Thailand, Viet Nam
9. Tigers: Korea, Malaysia, Singapore, Taiwan
10. Middle East: Algeria, Egypt, Morocco, Tunisia, Iran, Iraq, Jordan, Saudi Arabia, Syria, Yemen
11. Former-USSR: Russian Federation, Ukraine
12. Eastern Europe: Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia

Appendix II: Decomposition Techniques

It is often illuminating to trace through how macro aggregates shift over time by temporally “decomposing” accounting identities that link them together. In appendix we present procedures for investigating changes in labour productivity across producing sectors, employment generation by sectors, interactions between labour and capital productivity growth at the economy-wide level, and net borrowing by major institutional sectors.^a

Available data on output and employment come at yearly intervals. Growth rates have to be computed in discrete time, with formulas that can become quite complicated. To simplify an algebraic presentation as much as possible, we consider only observations at times 0 and 1. The growth rate of (say) the variable X is “ X -hat” or $\hat{X} = (X_1 - X_0) / X_0$ with the subscripts standing for points in time. At time 0, the relevant identity for decomposing labour productivity growth is $\sum_i X_0^i = X_0$ with the X_0^i as output levels by sector ($i = 1, 2, \dots, n$). Let $\theta_0^i = X_0^i / X_0$ be the share of sector i in real output in period zero. Similarly for employment: $\varepsilon_0^i = L_0^i / L_0$ with $\sum_i L_0^i = L_0$. The level of labour productivity in sector i is X_0^i / L_0^i with an exact growth rate between times 0 and 1 of $\xi_L^i = (1 + \hat{L}^i)^{-1} (\hat{X}^i - \hat{L}^i) \approx \bar{X}^i - \hat{L}^i$. In the literature, terms such as $(1 + \hat{L})^{-1}$ are often said to represent “interactions.”

After a bit of manipulation, an exact expression for the rate of growth of economy-wide labour productivity emerges as

$$\xi_L = (1 + \hat{L})^{-1} \sum_i [\theta_0^i (\hat{X}^i - \hat{L}^i) + (\theta_0^i - \varepsilon_0^i) \hat{L}^i]. \quad (1)$$

Aside from the interaction term $(1 + \hat{L})^{-1}$, ξ_L decomposes into two parts. One is a weighted average $\sum_i \theta_0^i (\hat{X}^i - \hat{L}^i)$ of sectoral rates of productivity growth as conventionally measured. The weights are the output shares θ_0^i . The other term, $\sum_i (\theta_0^i - \varepsilon_0^i) \hat{L}^i$, captures “reallocation effects.” If $\theta_0^i > \varepsilon_0^i$ sector i has a bigger share in output than employment, implying that it has relatively high average productivity. Positive employment growth in that sector (or a negative \hat{L}^i in a sector with $\theta_0^i < \varepsilon_0^i$) will increase productivity overall, in line with established theories about dualism in development economics.

a More detail on the analysis to follow is in Rada and Taylor (2006) and Taylor and Rada (2005).

For the record, another expression for \mathbf{x}_L emerges after rearrangement of (1),

$$\xi_L = (1 + \hat{L})^{-1} \sum_i [\varepsilon_0^i (\hat{X}^i - \hat{L}^i) + (\theta_0^i - \varepsilon_0^i) \hat{X}^i] \quad (2)$$

In (2), sectoral productivity growth rates are weighted by employment shares, and the reallocation effect is stated in terms of output growth rates. The message is basically the same as in (1).

Turning to employment generation, a fundamental insight is that if a sector creates jobs over time, then (if interaction terms are ignored) its growth rate of output per capita must exceed its growth rate of labour productivity. To see the details we can start with the identity $\phi_0 = L_0 / P_0 = \sum_i (L_0^i / X_0^i) (X_0^i / P_0)$ in which P_0 is the population at time zero. That is, ϕ_0 is the share of the population employed at time 0. Labour-output ratios (inverse average productivity levels) by sector are $b_0^i = L_0^i / X_0^i$ and sectoral output levels per capita are $\chi_0^i = X_0^i / P_0$.

After grinding, the growth rate of ϕ can be expressed as

$$\hat{\phi} = \sum_i \varepsilon_0^i (\hat{\chi}^i + \hat{b}^i + \hat{\chi}^i \hat{b}^i)$$

with the ε_0^i being the sectoral employment shares introduced above and $\hat{\chi}^i \hat{b}^i$ as a (presumably small) interaction term. Each sector's growth rate of labour productivity is $\xi_L^i = (1 + \hat{L}^i)^{-1} (\hat{X}^i - \hat{L}^i)$ so that it is related to the growth rate of the labour/output ratio as $\hat{b}^i (1 + \hat{X}^i) = -\xi_L^i (1 + \hat{L}^i)$. A final expression for $\hat{\phi}$ becomes

$$\hat{\phi} = \sum_i \varepsilon_0^i [\hat{\chi}^i - \xi_L^i (1 + \hat{\chi}^i) (1 + \hat{L}^i) (1 + \hat{X}^i)^{-1}], \quad (3)$$

with the terms multiplying ξ_L^i capturing the interactions.

The lead term (typically accurate to two or three significant digits) is

$$\hat{\phi} = \sum_i \varepsilon_0^i (\hat{\chi}^i - \xi_L^i).$$

The growth rate of the employment/population ratio is a weighted average of differences between sectoral growth rates of output per capita and productivity. Sectors with higher shares of total employment ε_0^i contribute more strongly to the average. One might expect that $\hat{\chi}_i > \xi_L^i$ in a “dynamic” sector, with the inequality reversed in one that is “declining” or just “mature.”

Next we consider labour and capital productivity in tandem on an economy-wide basis. Exact expressions for the growth rates of the two variables are $\xi_L = (1 + \hat{L})^{-1}(\hat{X} - \hat{L}) \approx \bar{X} - \hat{L}$ and $\xi_K = (1 + \hat{K})^{-1}(\hat{X} - \hat{K}) \approx \bar{X} - \hat{K}$. The growth of capital stock is given by the standard equation $\hat{K} = (I_0 / K_0) - \delta$ in which I_0 is gross fixed capital formation and δ is a “radioactive” depreciation rate (approximately equal to the inverse of the average lifetime of a capital good).

We estimated the capital stock growth rates used in the text by running the accumulation equation forward through time from an initial guess at the level of capital (from a capital to output ratio of 2.5) and a depreciation rate of 0.05. After a decade or so, the computed growth rates were insensitive to these parameters. This outcome is more or less built into the algebra. If investment grows at a rate g , for example, then the capital stock growth rate will converge to that value, independent of initial conditions and the value of δ .

Usually, labour and capital productivity growth rates are lumped together into a number called “total factor productivity growth” (TFPG) or, more realistically, the “residual” ξ . It is defined from the equation

$$\hat{X} = \alpha_0(\hat{L} + \xi_L) + (1 - \alpha_0)(\hat{K} + \xi_K) = \alpha_0\hat{L} + (1 - \alpha_0)\hat{K} + \xi \quad (4)$$

in which α_0 is the share of labour in total factor payments. Evidently, ξ is a weighted average of capital and labour productivity growth rates,

$$\xi = \alpha_0\xi_L + (1 - \alpha_0)\xi_K. \quad (5)$$

Equation (4) can be derived by taking the first difference of the factor payments identity built into the national accounts, $X_0 = \omega_0 L_0 + r_0 K_0$ (in which ω_0 and r_0 are real wage and profit rates respectively), or else from the usual mainstream mumbo-jumbo about an aggregate production function and associated marginal productivity factor demand equations.

Also, because

$$\frac{X_0 / L_0}{X_0 / K_0} = \frac{K_0}{L_0}$$

the expression

$$\xi_L - \xi_K = \hat{K} - \hat{L} \quad (6)$$

will hold to a good approximation. In words, if growth rates of labour and capital are pre-determined then the growth rate of labour productivity implies the growth rate of capital productivity or vice-versa. If capital grows much more rapidly than labour and there is positive labour productivity growth, then the growth rate of capital productivity may well be negative. Empirical implications of this observation are discussed in the text.

A final topic is how different institutional sectors contribute to effective demand. Growth analysis based only on supply-side factors does not capture the impacts on demand patterns of changes in institutions and policy such as liberalization. We focus on the three main institutional sectors: government, the private sector, and the rest of the world.

One approach involves a decomposition of shifts in aggregate demand due to changes in “injections” (investment I , exports E and government spending G) and parameters for “leakages” (saving rate s , import rate m , and tax rate t). One can identify the sector or sectors that lead output growth through high demand as signalled by large ratios of their injection levels to leakage rates. The exercise in its essence identifies each sector’s own-multiplier effect on output growth.

A variant representation which we use here emphasizes levels of net borrowing by sector, defined as the difference between investment and saving ($I - sX$) in the case of private sector, government spending less tax revenues ($G - tX$), and exports minus imports for the rest of the world ($E - mX$).^b Private positive net borrowing means that the sector is running up net liabilities by investing more than it saves while at the same time it is contributing to higher demand-side output growth. Similar statements apply to the other two sectors.

The aggregate accounting balance

$$(I - sX) + (G - tX) + (E - mX) = 0 \quad (4)$$

must necessarily hold, so net lending by the government or foreign sector (or both) would be required to compensate for a private sector deficit.

^b The supply or output concept (X) here is implicitly equal to GDP at factor cost plus imports of goods and services.

One final point worth emphasizing is that all the discussion is framed in terms of macro aggregates measured in real market prices, *not* in terms of purchasing power parity. The rationale is to keep the analysis as close as possible to normal macroeconomic discourse.

When used in international comparisons, PPP calculations basically revalue the labour content of output by sector. For example, the dollar cost of an up-market haircut in Mumbai at the current rupee/dollar exchange rate might be \$5. A similar service in New York City could run \$50. A PPP re-computation of Indian GDP raises the labour cost for the Mumbai barber to something closer to that of her New York counterpart.

Comparisons of income levels in these terms have become the accepted methodology, as in the results reported in Figure 1. However, PPP computations also move macro aggregates far away from their “normal” market price levels. Non-traded goods are re-valued in comparison to traded goods, the residential capital stock rises and non-residential falls, imports change relative to exports, and so on. In the text, we focus on standard macroeconomics, and for that reason we eschew PPP.

