each good in each country — and this is the main task of an international price comparison project — so that GDP can be repriced, using period *s* prices in country *b* as

$$ct \qquad ^{,bs} \qquad \text{pbkitick}, \qquad\qquad (19)$$

If country *b* is, for example, the US, and *s = t,* then yb, is country c's GDP at US prices, and the ratio of y,, to yb_{c}; is the purchasing power parity *(PPP)* exchange rate of country c's currency in terms of US dollars. if the *PPP* exchange rate were equal to the official exchange rate — which is not usually the case — GDP at US prices could be obtained without collecting price data simply by conversion, as is done for the data reported in the *WDR*. For measuring real economic growth, we need constant price series, so that, in addition to a base country, we need a base year with a base set of relative prices. Alternatively, as in the recommended and most commonly used series in the Penn World Table, the base can be updated year by year to construct a chain index of GDP.

The problem of choosing base prices. and a base country, like all index number "problems", is a conceptual and not a practical one. In principle, there is no reason other than convention to use US prices rather than Korean, Kenyan, or Chilean prices, and since they measure essentially different things, the ratio (for example) of Indian to Chinese GDP will differ depending on the choice. When making comparisons of GDP over time within a single developed country, the same conceptual difficulties arise, but because relative prices change slowly over time, the growth rate of GDP is hardly affected by the choice of base period. For those LDCs where a large share of GDP is concentrated in one or two primary commodities, this is not true, and even comparisons over time become hazardous. These difficulties are perhaps most severe for non-diversified oil exporters, although there are many other commodities (e.g. copper, cocoa, coffee) that have highly variable prices, and that make up a large fraction of GDP for some countries.

Figures 33.2 and 33.3 illustrate the time-series and cross-section implication-sof the choice of base prices. Figure 33.2 shows real GDP in Nigeria from 1965 to 1985 using two different Summers—Heston measures; according to both sets of estimates, GDP rose until the late 1970s, and has been declining since. The terms-of-trade corrected measure of GDP on the vertical axis allows for the effects on national income of changes in commodity exports and imports, while the chain measure on the horizontal axis does not. Nigeria is a major oil exporter and so has much greater growth using the terms-of-trade corrected measure. Since the Summers—Heston measures are equal by construction in 1985, Nigeria's GDP is very much lower in the earlier years when relative commodity prices are continuously adjusted; in 1965, the adjusted GDP