Comments of A. Heston

The two papers represent an interesting contrast in approaches to problems of international comparisons of productivity. When the International Comparison Programme (ICP) of the United Stations was adopted in 1968 it envisaged comparisons of purchasing powers of currency and real output from both the production side as well as the expenditure side. In fact the ICP has concentrated virtually all its efforts on comparisons from the expenditure side. The reasons for this are instructive in the context of the Lee-Tang and Van Ark, Inklaar and Timmer (VIT) papers.

Irving Kravis felt that the basis for comparing purchasing power parities should be detailed price comparisons of fully described items, so called specification pricing. While most countries have time to time price indexes, few had specified prices that could be compared with other countries so this was the major data collection required. As Kravis saw the problem, the number of items that needed to be compared was much less using the expenditure approach than the industry of origin approach. For one reason, the existing practice of industry of origin work as developed by Paige-Bombach (1959) involved subtracting intermediate inputs from gross value of output; this meant that not only were final product prices necessary, but also intermediate goods prices. Therefore, much more price collection would be required in the industry of origin approach than in the expenditure approach.

Another reason favoring the expenditure framework was that the classification could be more readily standardized across countries lending it readily to multilateral comparisons. The cost of course, is that the only productivity comparisons that could be made were at the level of GDP. There really was not a very satisfactory way to go from expenditure heading parities to parities for industry of origin parities, though a number of users have not been deterred.

The work reported by VIT represents an attempt to generate industry of origin estimates by essentially simplifying the data requirements in two ways. First, they work with parities developed for gross output and then apply value-added weights to these in aggregations. This greatly reduces the price collection.

The second simplification of VIT is to use unit values by industry group in place of specification prices. The main criticism of this procedure is that unit-values are affected by the composition of the underlying commodity group they represent, a limitation clearly recognized by VIT.

In contrast Lee and Tang follow the industry of origin approach as first carried out by Paige and Bombach and elaborated by Jorgenson, Gollop and Fraumeni[1987]. How do Lee and Tang obtain their specification prices? They mostly depend on the expenditure based final price comparisons involved in the Canada-US comparisons of 1996. So while they use specification prices they have to be generously interpeted to apply to many industrial classifications. And further, these are final product prices so they must strip them of taxes and margins to bring them to producers prices. It certainly is not clear that massaging of expenditure prices in this way gets you closer to the truth than directly using detailed unit values ala VIT.

Secondly, Lee and Tang take account of intermediate purchases using the input-output tables of both countries. There is no question this in principle is the right way to go. But in practice there are problems. For example, VIT report work done by Groningen attempting to apply unit values to both gross value and intermediate inputs and found they were quite unreliable by industry. Consider, for example, how dated is the U.S. input-output table that Lee and Tang must use in their comparison, namely 1987, especially with the increased outsourcing of business services in recent years. Further, it is not clear from Lee and Tang what price parities they use for business services; there are certainly no expenditure side parities that adequately represent these services.

A major contribution of Lee and Tang is to make total factor productivity estimates, including estimating labor quality by industry as well as capital stock. Certainly one of the surprising findings (Table 3) is that TFP is much closer to U.S. levels (93% for all of manufacturing) than is labor productivity, which is 75% from VIT for hours worked and about 80% for Lee and Tang for gross labor productivity and under 70% for value added labor productivity. It is difficult to tell from Lee and Tang how much this may be due to the capital compensation estimates from the respective input-output tables that put Canada substantially above the United States. This means that real values of capital compared to labor would be substantially reduced in Canada relative to the United States compared to what they would be in national currencies. Lee and Tang note that their resulting labor intensities are much lower in Canada than the United States, but much of this seems to be due to the capital compensation estimates.

Both studies provide evidence that labor productivity in Canadian manufacturing was 65-80% of U.S. levels. Given the different methodologies, this may be regarded as a fairly robust finding, even if the range remains large. As one considers the approaches of VIT and Lee and Tang, which is likely to pay off in future research? My judgement is that there is value to the TFP approach and that estimates of capital stock and labor hours adjusted for quality are useful. However, there seems to me

that given the quality of the data and the difficulty of pricing intermediate inputs, little is gained by going from gross to net value as in Lee and Tang. Much more is to be gained I believe by increasing the amount of specification pricing directly related to industry of origin outputs, rather than adapting expenditure prices as in Lee and Tang or relying on unit values as in VIT. The hybrid approach that VIT adapt when they combine some capital goods parities based on direct pricing with unit values for other sectors is certainly a step in the right direction. There is much to be admired in both of these papers and some combination of the approaches with more direct pricing of industry outputs seems a fruitful avenue for future research.

References

Jorgenson, Dale W., Frank M. Gollop and Barbara M. Fraumeni, (1987) Productivity and U.S. Economic Growth, Harvard University Press, Cambridge.

Paige, D. and G. Bombach (1959). A Comparison of National Output and Productivity in the United Kingdom and the United States, Paris: OEEC.