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THE WEIGHTLESS ECONOMY: THE MASS OF EVIDENCE

In the second of his regular columns on dematerialisation, Danny Tyson Quah looks at the size and growth of the world's weightless activity.

In my last column, I tried to clarify the substance underlying weightless-economy rhetoric. I highlighted the economic issues and ideas at stake in the discussion; and described some mechanisms by which the economic landscape might alter as dematerialisation proceeds.

But, while far from exhausting the circle of relevant ideas, that column also left open whether the economic issues discussed were merely hypothetical, i.e., had no empirical content. Elsewhere other writers—including, notably, Diane Coyle, in her forthcoming *The Weightless World*—have in different ways addressed this matter of real-world relevance. So I am now going to try to add to that discussion by pulling together some numbers on increasing weightlessness and national economic performance.

How it all adds up

This is not as straightforward as it might seem: it certainly calls for more legwork, say, than peeling off from a computer database the latest timeseries on GNP, and then testing it for this or that serial correlation property. An initial thought for assessing the empirical importance of the weightless economy might have been to compare, perhaps, value added in services—weightless if anything is—to value added in manufacturing—heavy metal surely. But that would not be right: semiconductor and microprocessor production count, appropriately, as part of manufacturing, whereas the semiconductor and microprocessor chips that result are themselves the key driving force in ongoing dematerialisation. Within their wafer-thin silicon forms, semiconductors and microprocessors contain ever increasing value inside ever reduced physical material. They provide the means to translate seemingly nonsensical bitstrings of 1s and 0s into valuable economic commodities, and, in so doing, remove geography and other physical barriers between production and consumption.

In modern warfare, semiconductor operation is the first capability of an enemy one aims to disable, and thus semiconductors compare in importance with railways in earlier times. However, unlike railways, semiconductors and microprocessors directly help improve the design and production of better versions of themselves, and thus differ dramatically from earlier technologies—at least from the perspective of understanding economic growth.

Be that as it may, in national income accounts the manufacture of these chips gets lumped with the production of railway sleepers, building cranes, lumber and wood products, or stone, clay and glass. The implications of each of these for economic growth differs, and so the classification misleads. Just as inappropriate, however, would be to put these dematerialised high-tech products in together with services such as gardening, hairdressing, hotel bed-making, or valet parking. A critical aspect of weightless economic activity is its healthy disrespect for physical geography and national boundaries; the services just mentioned, by contrast, are

quintessential examples of non-tradeables in traditional reasoning on international trade.

The upshot of this is that the usual national income product accounts cannot directly inform on the importance of the weightless economy in daily economic life. And, while computers and information technology (IT) form a large part of high-tech activity in the weightless knowledge-based economy which I described last time, they are not everything: financial services, communications, media entertainment all show economic properties similar to IT's, and so should be considered together.

Big numbers but weightless

A first step then is to look under the surface on the national income product accounts. In 1993, total US GDP came to six thousand five hundred and fifty billion dollars. Within the services category for US national income and product accounts, the sum total of : finance, insurance, and real estate; business services; motion pictures; and educational services averaged 23% of total US GDP between 1987 and 1994. This collection of weightless economic activity thus accounted for close to a quarter of all US economic production. And aside, perhaps, from the real-estate component, all of these services are readily exportable. In 1995, 40% of the earnings of American makers of movies, CDs, and videos came from abroad.

By contrast, all of construction and manufacturing put together (except for electronic and other electrical equipment) came to a fifth of GDP. By the mid-nineties, business services alone already matched construction in the contribution to US GDP. Looking at dynamics magnifies these effects: the construction and manufacturing component I outlined has been declining during this period; the weightless element increasing.

One can do all the sums differently to emphasise instead the high-tech, weightless-economy activity in computers and telecommunications. US spending on computers, telecommunications, and peripherals, together with net IT exports, contributed 5% of total GDP in 1996: this exceeded all of traditional construction, and was one third of traditional manufacturing.

In 1993, the US exported one hundred and eighty eight billion dollars' worth of traditional manufactures (excluding electronic and electrical goods) to the other members of the OECD. (It makes sense to look specifically at exports to the OECD, since those countries would be the ready market for high-tech, weightless economy exports). But recall the numbers I cited earlier: total *exportable* weightless economy services were fifteen hundred billion dollars; actual high tech expenditure and *exports* a further three hundred and fifty billion dollars – ten times traditional manufacture exports to the OECD.

Just an American dream?

But is the scale of this shift to the weightless economy peculiar to the US? Hardly. In 1995, five high income economies were classified as having services as their major export category. Of those five, only one was an OECD economy – the UK.* All the other OECD economies fell into one of three groups: i) exporters primarily of

* The others were the Bahamas, Cyprus, French Polynesia, and Kuwait.

manufactures (including, significantly, Canada, Germany, Italy and Japan);
ii) exporters mainly of primary products (Iceland and New Zealand); and
iii) diversified exporters (among these, France and the US). I have documented elsewhere (the Bank of England Quarterly Bulletin February 1997) the importance of services – weightless economic activity – to the UK.

In providing this fresh new face on exports and economic activity, the UK and the US might well be leading the way, while Germany and Japan continue to rely on more traditional manufacturing. However, the increased emphasis on weightless-economy production and activity is growing among all the richest economies. In 1994, the world IT market amounted to over four hundred billion dollars, with 95% of that in the OECD alone. More striking still, over four fifths of world IT expenditure was spent in just five countries: the US, Japan, Germany, France, and the UK. By 1996, the world was trading five hundred billion dollars' worth of IT a year: to put things in perspective, that's just a little less than one tenth of US GDP.

One can play more games with disaggregated data: computer engineers and scientists and systems analysts are among the fastest growing categories in US employment; and while, during the 1990s, wages of the median US worker have fallen in real terms, those of computer programmers have risen consistently – real wages for male programmers by 13%, for females by 20%.

The picture that emerges is that successful economies are increasingly reliant on the weightless economy. And those people in the who, in a fractal fashion relative to their home economies, have shown similar specialisation, have similarly been among the most economically successful. It really is happening out there.

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