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Europe Versus America: A Response to the Critics

di Paul Krugman

A note for most readers: This is inside economics baseball football, a discussion mostly among professionals — and covers issues that even economists seem to be perplexed by. You have been warned.

Phillipe Aghion, Antonin Bergeaud and Luis Garicano have written a response to my discussions of the Europe/US productivity gap. I respect their standing as serious analysts, who have produced a body of valuable work.

Yet I found their article baffling, because their arguments appear to rest on the same confusion about the implications of different national productivity trends that I am trying to clarify. In fact, their apparent confusion about the point that I am making – that people often misunderstand what productivity trends mean for cross-country comparisons -- is reflected in the very title of their article, *The Mismeasurement of Europe's Productivity.*

Let me be clear: I am *not* arguing that European productivity is mismeasured, and never said that. I am, instead, arguing that standard measures of productivity do not have the implications for cross-country comparisons of living standards and economic welfare that many people – including many economists – think they have. To put it a slightly different way: people are using data that is unsuited for the kinds of comparisons that they are trying to make. Thus, the conclusions that they are drawing from the data are misguided. But this is not to say that the data are wrong.

The apparent misunderstanding by Aghion et al of what I am trying to say is also reflected in their discussion. Their presentation mostly centers on arguing that European productivity growth is in fact lower than US productivity growth. This is puzzling, because I am not arguing that European productivity growth matches or

exceeds US productivity growth. Like Aghion et al, I am fully aware that European productivity growth is lower than in the U.S. But this is not the actual issue that I am trying to address. My question is whether the standard comparison of European and US productivity growth rates is a good indicator of what is actually going on in the two economies over time.

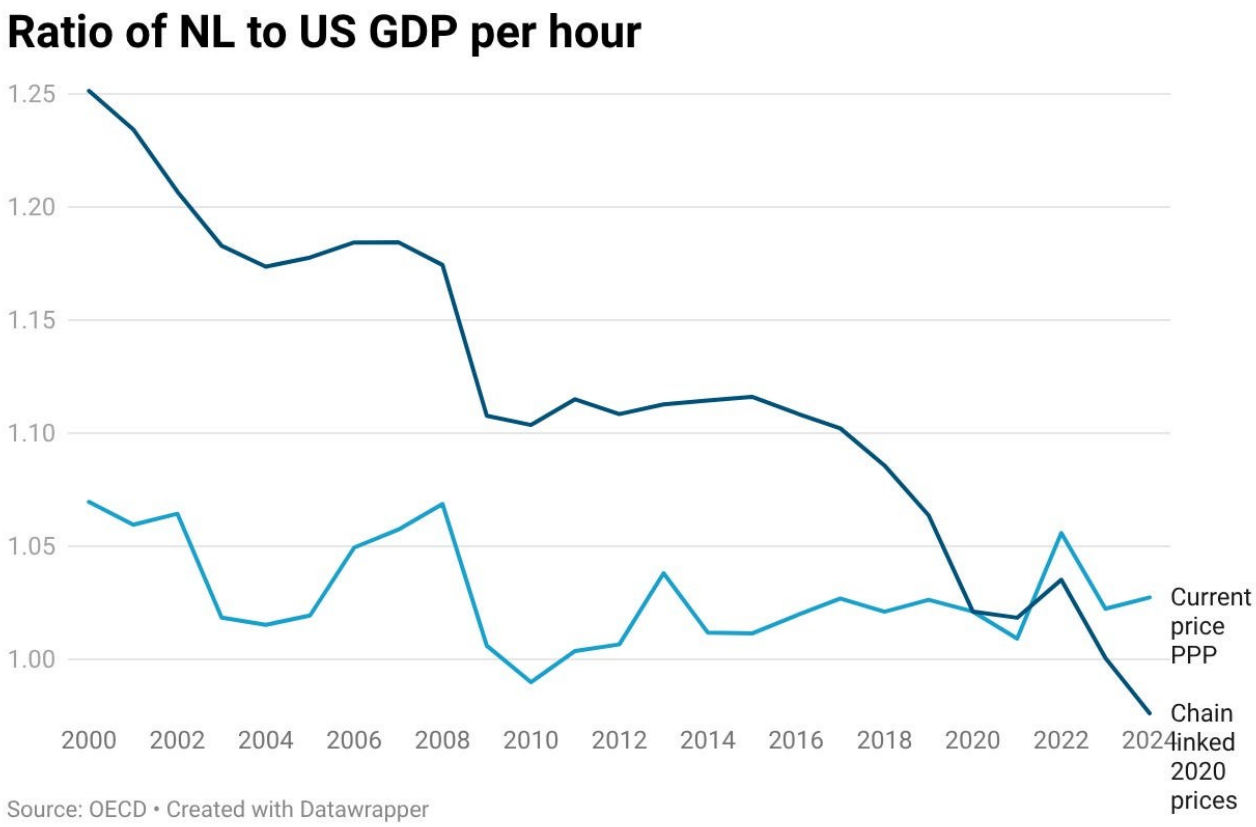
From my viewpoint, the starting point for the debate on the relative performance of the EU and the US should be the acknowledgment that a comparison of US-Europe productivity trends looks very different if you use two different metrics.

One method is to compare the growth in inflation-adjusted GDP per hour within countries. This is a standard way to make cross-country comparisons, but one that answers the wrong question. The other method is to compare the year-by-year value of output per worker-hour, adjusted for differences in national price levels to control for exchange rate instability, but not for changing price levels over time. This measure is, I would argue, much more meaningful for comparing trends in economic welfare across countries.

You might think, and I suspect that many observers have assumed, that these two approaches tell similar stories. But they don't.

I've been in the Netherlands recently, looking at Dutch data. As a high-productivity nation with much lower measured productivity growth at constant prices than the US, the Netherlands, it turns out, offer a kind of *reductio ad absurdum* for many US-EU comparisons. So I'll initially focus on Dutch data to make my point, although the basic story applies to much of the EU.

Let's look at OECD estimates of GDP per worker-hour in the US and NL, adjusting the data two ways. The first (the blue line) looks at the ratio of NL to US productivity year by year at current prices, adjusted only for purchasing power parity. By this measure, Dutch productivity is slightly higher than US productivity now, probably because of the presence of highly capital-intensive industries associated with the port of Rotterdam. NL productivity was also slightly higher in 2000, with no significant trend:



Suppose, however, that we measure GDP and hence productivity growth adjusting for national inflation rates (the black line). The OECD uses 2020 as a base year, so the two measures of relative productivity are equal in that year. But as we move back in time, they diverge. By this measure, Dutch productivity was 25 percent higher than US productivity in 2000.

Was the Netherlands drastically richer and more productive than America a generation ago? I doubt that many people would agree with that proposition. It's certainly not what people believed at the time.

But if you find this proposition implausible, you must also concede that the conventional understanding of the implications of differing productivity growth in Europe and the US is highly problematic. If we want to compare relative economic welfare in two countries over time, surely we want to compare the value of the goods each worker can produce in any given year, tracked over time.

Think about it. Do you really want to claim that Dutch workers were much more productive than U.S. workers in the year 2000 because the goods they produced per

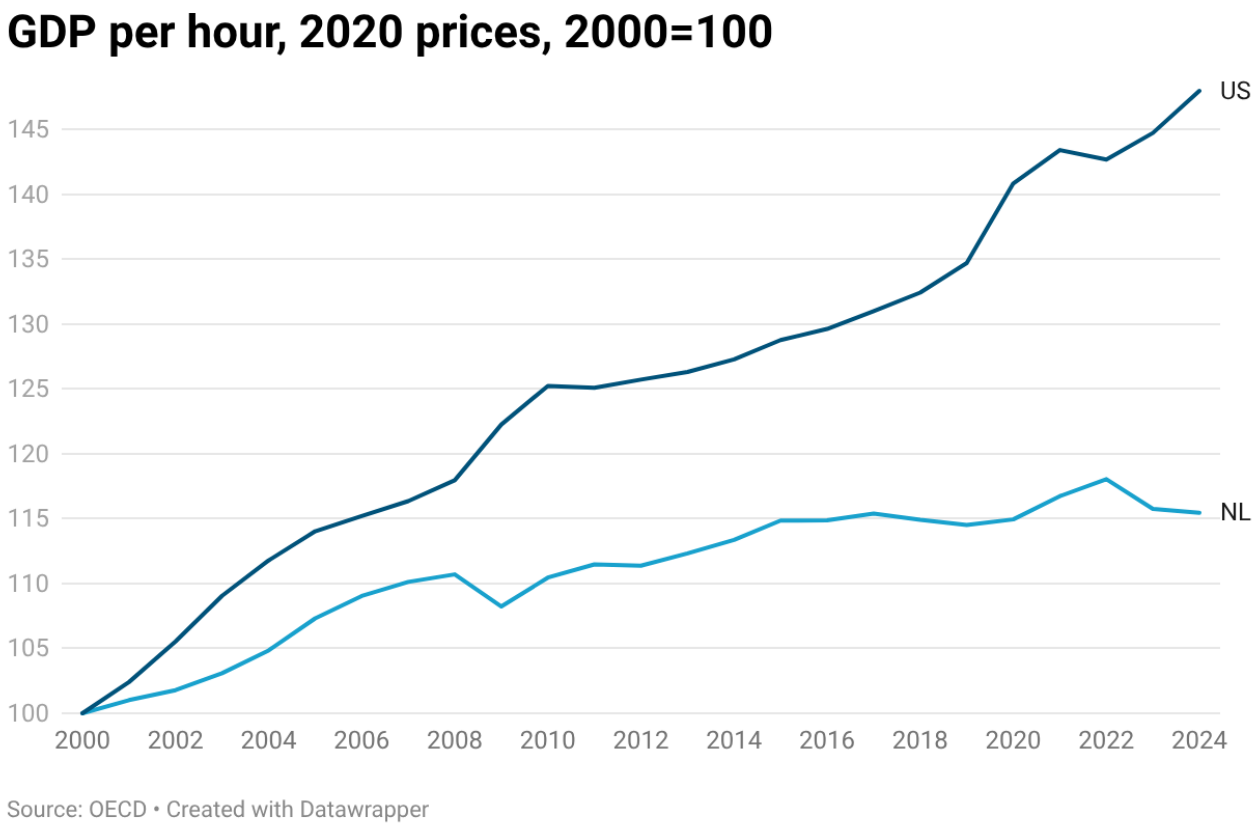
hour, although roughly equal in value to the goods produced per hour by US workers at that time, would eventually be worth much more than US production at prices that *didn't* prevail at the time — but *would* prevail two decades later, in 2020? Huh? Yet, when using constant-price productivity comparisons, that is exactly the claim that people are making.

Now, I have tried to explain the apparent paradox that Europe has lower productivity growth than the US but has not seen a decline in relative output per hour at current prices by pointing to the fact that the US and European economies produce different mixes of goods, with the US mix tilted toward high-tech goods with rapid productivity growth but falling relative prices. I'm open to alternative explanations of the US-EU paradox. But the paradox is there and needs explanation.

OK, as I read Aghion et al they offer four criticisms of my analysis, as follows:

First, *international comparisons of GDP using purchasing power parity are problematic and unreliable*: This is, of course, true. But estimates of real GDP, which are supposed to let us compare GDP within a single country in different years, are also, and I would argue equally, problematic. In a sense both comparisons of different national economies at a single point in time and comparisons of a single national economy at different points in time are imperfect metaphors resting on imperfect numbers. But I'm not aware of any reason to believe that these imperfections bias the comparisons I've been making in any systematic way.

Second, *productivity at constant national prices has risen much faster in the US than in Europe*. Why, yes. That's not a refutation of my analysis, it's precisely where I started — I wanted to understand how to reconcile these different rates of productivity growth with the fact that relative European productivity and purchasing power at current prices have not declined. The same data that underly the chart above show this for US and NL productivity at 2020 prices:



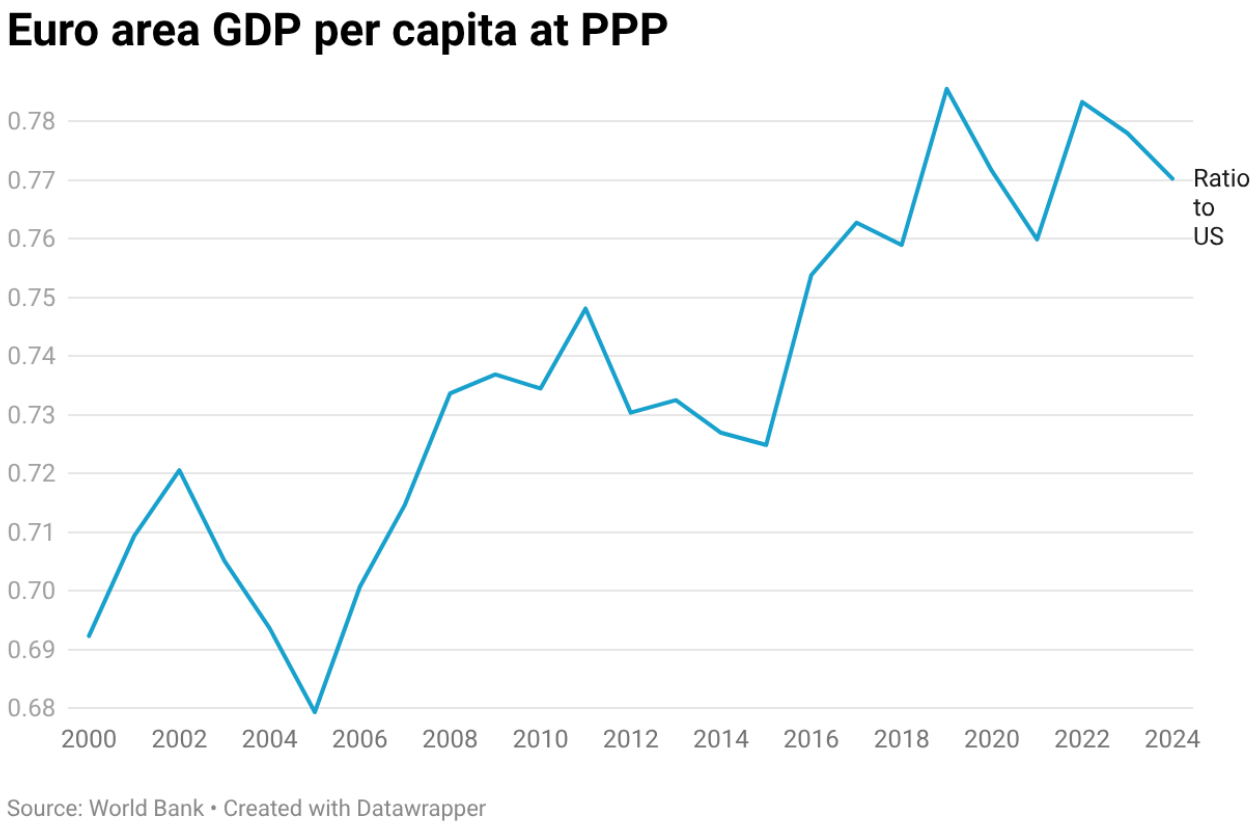
These numbers show US productivity rising 1.6 percent per year, while NL productivity rises only 0.6 percent per year. But that comparison is already incorporated in my discussion. So citing such numbers as a supposed refutation of my analysis simply misses the point. In particular, I have no idea why Aghion et al believe that a table showing multiple estimates of higher productivity growth in the US contributes to the discussion.

Third, "Current PPPs and national deflators are giving sharply different answers to what at first sight looks like the same price question, but as we saw, is not." Indeed. That's exactly the point I've been trying to make. The important point is to ask which is the right question — and if we're asking whether Europe is falling behind in purchasing power and living standards, PPPs, which say that it isn't, are the right measure.

A related point: Aghion et al assert as a problem with current-price comparisons that "If the US produces more of the goods whose prices fall rapidly, then valuing both economies at today's prices can make part of the earlier volume gain look smaller."

Color me confused. That's not a problem with these comparisons — it is *precisely the mechanism I invoke to explain the apparent US-EU growth paradox*. See the formal model I laid out!

Finally, Aghion et al assert that the U.S. lead in technology "has led to higher US wages and profits, and the gap is widening each year." OK, that's the crux of the discussion. But this assertion — which they don't back with any data — is simply untrue. And I began this whole discussion with the observation that it isn't true. The sum of profits and wages is factor income, which is by definition equal to GDP. Let me switch from the Netherlands to the euro area as a whole, which has somewhat lower GDP per capita than the US adjusted for differences in the price level. But this gap has *not* widened over time:



Or, if you want an independent data source, look at mean household income as estimated by LIS, the cross-national data center in Luxembourg. Between 2000 and 2021, these data show nominal income rising 3.1 percent annually in the Netherlands,

3.3 percent in the U.S. Given slightly lower inflation in Europe, this does not show a widening gap. My guess is that people simply assume that the gap must have widened because they know about the standard productivity growth comparisons. But my whole point is that these comparisons don't mean what people think they mean.

The bottom line here is that while I could of course be wrong about the US-EU comparison, the Aghion et al critique doesn't make the case that I'm wrong. The data that they claim refute my argument are basically the same data I used to *make* that argument and are completely consistent with what I've been saying. They are, in fact, exactly what my attempts to model the paradox predict we'd see.

Again, I'm quite willing to be proved wrong. But if we're going to have a serious discussion, the critiques have to go beyond simply restating productivity data that show Europe lagging. They need to acknowledge the reality that despite these data, comparisons between the US and Europe at each point in time don't show the gap between Europe and the United States widening, and at least try to explain why.