Growth: What does it take in today's world? - Lecture by Andrew Bailey

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Andrew's speech looks at economic growth and asks what it takes to increase the rate of growth in the economy. In answering that question, Andrew covers both the current situation in the UK and abroad, and economic history.

Speech

Thank you for inviting me to speak today. It's always a pleasure to be back in my home town, and particularly here at Leicester University, not least because I went to school next door.

I am going to speak today about a topical subject – economic growth. The question I set myself is, what does it take to create a sustained increase in the growth rate of the economy in today's world? I'm going to range quite wide in answering the question, drawing in the current situation here in the UK and the world, and some economic history too.

Economic growth is, quite simply, the rate of expansion of the size of the economy. Let me start by explaining how it matters to the Monetary Policy Committee when we decide on the appropriate level of interest rates to achieve our objective of price stability, the 2% inflation target. There are two parts to why growth matters for monetary policy – the outcome and the inputs. On the first, quite simply, low and stable inflation is the best contribution monetary policy can make to growth in the economy. The same goes for financial stability, our other core responsibility as the central bank, which is also a key condition for growth.

On the inputs side, growth matters because monetary policy decisions require us to assess the inflationary consequences of the pressure on economic resources in this country. That pressure reflects the balance between demand and supply in goods and services and labour markets. To observe that level of pressure, we can't just look at actual national income or output and employment. If that's all we did, we would be left saying "so what?" We have to compare the actual position with the productive potential of the economy (the supply capacity of the economy) and in doing so assess resource utilisation and thus the degree of pressure.

Except that, we can't observe or directly measure the supply capacity of the economy. It has to be estimated to derive an assessment of potential national income/output. Don't worry, I'm not going to use algebra today, but just a simple illustration: when we do those estimates, we label actual national income/output as Y, and potential income/output as Y*.[1] When Y=Y*, the value of goods and services produced in the economy is at the level where productive factors or resources – labour, capital and land – are being used at a sustainable rate, and thus we are at the level of national income/output consistent with inflation being at the target.

In fact, things are a bit more complicated, because productive potential (Y*) has both a long-run structural dimension – an influence here is the pattern of an ageing population and what that means for future labour supply – and a shorter run cyclical component – an influence here is the impact of a shock like Covid on labour supply, or the war in Ukraine on energy and food supply. On this last point, you will note that I have slipped in here that we don't live in a closed economy – potential supply and actual demand are affected by what goes on in the rest of the world too.

Two more points before I get off this section on definitions. First, in the MPC we spend time working out what we make of a concept called the output gap. Put simply, it's the difference between potential supply and actual production in the economy. It's the difference between Y and Y*, and provides one, but only one, read on inflationary pressures. And, we have to make this assessment looking forwards, as a forecast, because that's where the level of the interest rate now will have its effect. We can't observe the output gap;, so we have to use all the evidence at our disposal to form a view on it as a matter of judgement.

The second point relates to the growth rate of the economy – the growth of national income/ output. What are the components of productive potential (Y*)? I am going to keep this quite simple and stick to two – the supply of labour, and output per unit of labour. The latter is the simple definition of productivity – the effectiveness of the use of resources. You can reasonably say at this point, hang on there are three factors of production in an economy: labour, land (meaning all natural resources) and capital. Yes there are. However, it is useful to focus on labour supply and labour productivity, but recognise that the available land and capital supply are important determinants of labour productivity. Most standard models of economic growth will underline the role of investment in physical and human capital (including of course education).

Critically, there is a very direct link between productivity growth and living standards. Investment in capital and innovation which supports productivity growth will feed through to a growth in living standards.

So, what has been going on with the growth of potential supply in the economy in recent times? A spoiler here – it's not a very good story. I am going to give three figures for three time periods based on Bank staff estimates: the average annual rate of growth of potential supply in the UK economy and the contribution to that growth rate of productivity and labour supply. From 1990 to 2008, the average annual potential growth rate was 2.6%. Productivity contributed 2.2pp and labour supply 0.4pp. After the financial crisis, from 2009 to 2019, the potential growth rate fell to 1.3%pa, of which productivity contributed 0.3pp and labour supply 1.0pp. From 2020 to 2023 the potential growth rate fell further to 0.7%, with productivity contributing 0.5pp and labour supply 0.2pp. Covid was clearly a major factor in the most recent period. The comparable numbers for the growth of demand in the economy – actual growth – are: 1990-2008 2.3%; 2009-2019 1.4% and 2020-2023 1.1%.

I think the point comes across clearly. The growth of potential supply has fallen, with the main contributor to that fall being weaker productivity growth. Covid was a major factor in causing a further fall. But it is the decade before Covid that provides a better read.

Productivity growth fell very sharply, and while the labour supply did increase, it did not offset the fall in productivity growth. And, actual growth rates have fallen too, so that actual and potential growth have remained broadly in line.

Moreover, in terms of living standards, an increase in labour supply does not offset a decline in productivity growth. We can see that by looking at the rate of growth of national income per person (GDP per capita). Between 1990 and 2008 the average annual growth rate was 1.8%. From 2009 to 2019, the annual growth rate was 0.7%. I have not replicated the comparison between 2020 and 2023 because 2020 was a bad year on which to start a comparison given the impact of Covid lock-downs.

The story of growth is, I am afraid, quite clear. It has slowed markedly in the last fifteen years or so, and this has affected the advance of living standards (both as a whole and among groups in society). Moreover, I will add one more important point. Like almost all advanced economies, we have a population that is on average increasing in age, and will continue to do so. Other things equal this will over time reduce the supply of labour to the workforce.

At this point, you can reasonably ask if I can say something to cheer things up? I will have a go, because my title today is: Growth, what does it take in today's world? To do this, I am going to turn to history for a while, and then come back to prospects now. I am going to make some longer-run observations on growth in the British economy, and then draw out some points which are salient to the situation today. They also help to tackle an important question we face today, namely is Artificial Intelligence the next big thing in terms of growth in the economy?

Britain is credited with being the first modern industrial nation. Typically, the definition of modern economic growth in this context is where technological progress is centre stage[2]. Recall that GDP growth per capita was 1.8% pa before the financial crisis, but only 0.7% pa afterwards. Looked at in the longer run context, a figure of around 2.2%-2.4% pa was the average from 1950 onwards. And, a figure of about ¾% was respectable for the nineteenth century, where the average was a bit under 1% for the period of the so-called Industrial Revolution. All things are relative and close to 1% was a considerable step up on the pre-Industrial era[3].

Still, we are left with the conclusion that a growth rate of per capita income which disappoints today would have looked respectable during the Industrial Revolution. What's changed? Two things stand out. First, it looks as if the overall growth rate has been enhanced over time as the development of institutions (public and private) and policies has provided an environment

that supports growth. This is often known as endogenous growth – the environment supports and enhances the impact of technological progress and investment. Second, in an open economy such as the UK a key to growth has over time become the prompt and effective diffusion of foreign technology as well as domestic invention[4]. In other words, there is a bigger base of innovation to draw upon.

Having made the point that things have changed in terms of growth rates since the Industrial Revolution, I want to go back to that period to identify four salient features which I believe are highly relevant to understanding today's environment. The four are: technological change; energy supply; population change; and the role of trade. These are all big subjects in their own right, so my treatment of them is going to be quite sparing. The main point I want to draw out is that each of these issues was important in the process of industrialisation, and each of them remains important in today's world.

Let me start by attempting to define what is meant by the term Industrial Revolution? A lot of ink has been used on this one. I am going to borrow a definition from the economic historian Tony Wrigley:

"The distinguishing feature of the industrial revolution which has transformed the lives of the inhabitants of industrialised societies has been a large and sustained rise in real income per head. Without such a change the bulk of all income would necessarily have continued to be spent on food and the bulk of the labour force would therefore have continued to be employed upon the land …..only when output growth exceeds population increase substantially and consistently, can there be grounds for supposing that an industrial revolution is in train[5]".

The essence of the definition is that technological change appeared to break the tight link between the economy's endowments of factors of production (land, capital and labour) and income, a break that was not expected to occur by classical economists such as Adam Smith who did not envisage sustained growth[6]. This technological change did not happen as quickly as the word 'revolution' would suggest. Moreover, it didn't happen evenly over time and certainly not evenly across the economy, and that too has led to a lot of ink being used to describe and debate the meaning of the term Industrial Revolution.

What are the lessons of this for today? I think there are two lessons. First, if we think we are more or less using the factors of production fully today – if Y* is near to the production frontier made possible by the state of current technology, then we will need some quite large technological advance to break again the link that Adam Smith and the classical economists described – in other words, to push the frontier out. I am going to come back to whether AI is that technology. Second, even if the link is broken, it will take time to materialise and spread across the economy. This is a long term process. To be clear though, this does not mean that

we can expect no growth without a major breakthrough on technology. Growth rates will go up and down for many reasons. But a substantial and sustained increase in growth most probably does need this breakthrough to happen, as has been case in the past.

Another way of capturing this issue is to ask what has caused the slowdown in productivity growth evident in all the major economies – not just the UK – over the last 15 to 20 years. There are two theories on this whodunnit. The first is that it is a consequence of the Global Financial Crisis.

The second is that since the start of the slowdown seems to pre-date the GFC it is due to a trend decline in technological innovation as the ICT revolution of the internet, faster semi-conductors etc., started to slow (and what matters here is the rate of increase of innovation, not the level of it). The evidence seems to provide rather more support for the second explanation, but both could have been at work.[7]

My second salient feature concerns the supply of energy. To return to Tony Wrigley's work for a moment, he made the point that the Industrial Revolution involved the discovery and application of a "method of deriving mechanical energy from a mineral source on a substantial scale" and an escape from "the problems associated with dependence on organic raw materials"[8]. Put simply it was a move from burning wood fires to coal burning steam engines.

There are two lessons here for today that I want to draw out briefly. First, the steam engine is credited as the first example of what is called a General Purpose Technology (GPT). In other words, it enabled widespread innovation across many parts of the economy. The economic historian Nick Crafts identified two subsequent such GPTs, electricity from around the turn of the nineteenth to twentieth centuries, and Information and Communication Technology from around the 1970s-1980s. Crafts argued that the contribution from each of these GPTs has grown over time – each one has contributed more to income growth than its predecessors. This is grounds for optimism. According to his estimates, by 2006 the cumulative productivity gain from ICT had matched that of steam over the roughly century to 1910 suggesting that the progress of technology has become more rapid over time, and that we have become better at putting GPTs to work. Reasons for this improvement include educational advances, better financing and government policies to support R&D.

The second lesson for today from the energy feature of the Industrial Revolution is that we are now seeing the move away from mineral based energy towards so-called renewable sources. This is at the heart of the climate debate. The economics would suggest that it is then a matter of pricing these sources to ensure that we capture the so-called externalities – the good and bad effects that come from each of them.

My third important feature is population, and labour as a factor of production. Alongside a revolution in technology starting in the second half of the eighteenth century, the UK experienced an unprecedented increase in population which was not directly linked to the development of industrial technology. By the 1860s, the population was more than 3.5 times its level in the 1730s, mainly due to an increased birth rate. From 1780 to 1870 the annual growth rate of the population was around 1.2%. Bear in mind that from 1990 to 2008, the annual growth rate of the potential labour supply was 0.4%, while in the decade after the financial crisis it was 1%. To sustain a higher growth rate of population for a century in the earlier period was impressive.[9]

When we compare the story of the Industrial Revolution on labour supply with recent times, we can be rather more granular on the modern period. There is a difference between the growth rate of the population and the growth rate of the potential labour supply, but we have the latter calculated only for the modern period, along with its components. Between 1998 and 2007 annual potential labour supply growth of 0.7% was made up of an equivalent growth in population, slightly higher participation in the labour force, slightly lower unemployment, and a fall in average hours worked. In the next decade we saw stronger growth in potential labour supply made up of a similar growth in the population, very little growth in the participation rate, a further fall in unemployment and a rise in average hours worked. The subsequent Covid period up to 2023 saw very little growth in potential labour supply, but a faster growth in population offset by a fall in participation, slightly higher unemployment and flat average hours. Population growth has been the largest recent driver of labour supply growth, with a well-known story on net migration as the major contributor, on which to be clear I offer no value judgement. Meanwhile, labour force participation has fallen, meaning that more people are not seeking to work, though we have some doubts about the data here.

Behind these recent trends is the larger story of the impact of a population which is on average ageing, as is the case in almost all the industrialised countries. Over recent history, the effects of ageing have been offset by increases in labour force participation within age groups, particularly as women remained in the labour force longer, including as the female state pension age rose to equal that of males. But this offsetting mechanism seems to be coming to a natural end.

The conclusion I draw from all of this is that whereas the Industrial Revolution was enabled by a parallel increase in the labour supply, we cannot count on this to the same degree today, even if we do see a return to the more prevailing level of participation pre-Covid. If so, that puts more emphasis on productivity and technological change as the driver of growth to come.

My fourth salient feature is trade and the openness of economies, another big one, and very much a subject of the moment. Let’s go back to Adam Smith. One of Smith’s important insights can be described by his observation that if a foreign country can supply us with a

commodity more cheaply than we can make it, better buy it off them, with some part of the produce of our own industry employed in a way in which we have some advantage. That advantage which Smith pointed to would arise from one of his other insights, the benefits of specialisation and division of labour. In this way, Smith set out the view that greater openness through trade will increase competition, productivity and growth[10].

Nineteenth century economic growth had its origin in technological change, but as the century went on it was reinforced by trade expansion supported by falling transport costs. As the economist Robert Lucas put it, “the evidence on trade and growth suggests that the rate of diffusion of technology depends on economic interactions on trade”. He added that “economic growth is poorly described as the production of more and more of the same stuff”, and that “physical capital accumulation alone does not suffice to transform a static economy into a perpetually growing one.”[11] Indeed.

On its own the technological change would not have supported the full Industrial Revolution without a major growth in trade which secured a supply of imported raw materials – e.g. cotton – and markets overseas in which to sell the finished goods. Britain’s move to free trade after 1846, and the subsequent pattern of tariff reductions in Western Europe was a logical extension of comparative advantage for relatively land scarce but labour and capital abundant economies.

The result of all of this activity was a rapidly developed Atlantic Economy covering countries on both sides of the ocean which had a growing concentration on manufacturing goods. But it is overly simplistic to conclude that the story was a universal generalisation of industrialisation fostered by and fostering the rise of free trade. The story was not that simple. Protection and tariffs were a feature of the more labour scarce New World (notably the USA) in the late nineteenth century, and by the end of the century there were wider signs of a protectionist backlash[12]. From 1914 to around 1950 the world retreated into autarky. There was a backlash against globalisation before the 1st World War began in 1914. Nineteenth century industrialisation had created two distributional consequences: within some countries, for instance in the US where tariffs favoured industrial interests; and between the Atlantic economy and much of the rest of the world, with this second effect becoming known as the Great Divergence[13].

After 1950, trade and openness revived, with a reduction in tariff barriers which was more a product of inter-governmental agreement on a multilateral basis. Over the modern period of time as more countries industrialised, trade flows have increasingly involved the exchange of manufactured goods, including the exchange of goods during the production process. Late nineteenth century trade created income inequalities between countries in the Atlantic Economy and the rest of the world and within countries. In contrast, recent trade developments have started to close those gaps, most notably between China and the traditional industrialised economies.

Income distribution matters when thinking about the relationships between trade and growth. Associated with this point is the degree to which the interaction of trade and growth upends peoples and communities. Recent quite high profile US work on trade policy has made the following point drawing on a comparison with nineteenth century Britain:-

“In the United Kingdom ….. the repeal of the protectionist Corn Laws prompted agricultural workers to flee the countryside for industrialising urban areas where factory jobs were waiting. By contrast, the American factory workers who were displaced beginning in the 1990s either had nowhere to go or ended-up working in low-skill, low paying service jobs.”[14]

I can trace my own family in Norfolk back to the sixteenth century, but by 1886 they had moved to Dudley in the Black Country, via a one generation stopover in Suffolk. I have no idea whether “flee to a waiting job” is the right description for their move as they have left no commentary behind.

That said, my family seem to fit the bill for nineteenth century Britain. I should say that it is therefore due to the Industrial Revolution that I was not always popular at school. The reason is that I am a West Bromwich Albion supporter because of the family connection to Dudley, and not a Leicester City supporter, though I try to make up for it as a Leicester Tigers and County Cricket supporter.

Robert Lighthizer, who was the US Trade Representative in the first Trump Administration, goes on to make a key point in this area, namely that his concern is a country, in this case China, running “huge trade surpluses with the entire world year after year for decades”[15]. The key point is that in the contemporary world, unlike the nineteenth century, the political economy is not well suited to such persistent trade imbalances with their consequent effects. If that is too subtle, another way to put it is that such a system could be sustained in a world of empires and colonies, but no readily now.

But, two things follow from this. First, Adam Smith and the classical economists were not wrong to make the link between trade and growth. Second, a cause of the contemporary imbalance is at least in part weak domestic demand in a number of countries, of which China is an important one – i.e. more of China’s national income should be spent by its citizens on their own consumption. There are, therefore, also offsetting positions in other countries. We need effective multilateral processes that support getting us to more balanced outcomes.

This is the issue today at the heart of the pressure to return to higher levels of tariffs. To quote Robert Lucas again, until the Industrial Revolution two hundred years ago, the forces of economics:

“sufficed to maintain a rough equality of incomes across societies (not, of course, within societies) around the world. The industrial revolution overrode these forces for equality for an amazing two centuries. That is why we call it a “revolution”. But they have reasserted

themselves in the last half of the twentieth century, and I think the restoration of inter-society income equality will be one of the major economic events of the century to come. Of course, this does not entail the undoing of the industrial revolution. In 1800 all societies were equally poor and stagnant. If by 2100 we are equally rich and growing, this will not mean that we haven't got anywhere![16]"

But we have to caveat that with some other wise words, namely that "(s)upporters of free trade in tangible goods have long recognised that its net benefits to countries typically are distributed unevenly, creating domestic winners and losers"[17].

Let me draw the history together and put it into the context of achieving sustained growth in the world we face today. The Industrial Revolution led to the so-called Great Divergence, which created an industrialised Atlantic Economy. This transformation was enabled by very open trade in goods, capital flows across the world and likewise unprecedented migration of people (mainly within the Atlantic Economy from Europe to North America). This system fell apart in the first half of the Twentieth Century, with two world wars and the Great Depression.

After the Second World War, up to the 1970s, the world economy was rebuilt under a system that featured strong capital and exchange rate controls, a gradual loosening of the trade controls that had increased between the wars, and greater freedom to pursue domestic policies to avoid the inter-war experience of mass unemployment. After the 1970s this system broke down and the world economy moved on to an era of free trade, capital flows that looked much more like the late nineteenth century, flexible exchange rates, and even more emphasis on independent national monetary and fiscal policies to tackle domestic situations.

It is in this setting that since the 1990s we have seen a further acceleration of the end of the Great Divergence, though not evenly. But, the evidence indicates that this system can lead to persistent large trade and current account imbalances. And here, it is persistence that matters. These imbalances are at the heart of what features so prominently in the news today – the issue, once again, of tariffs.

You will, I hope be pleased to hear that I am not going to give a further lecture today on this subject. But I will make three important points. First, I agree with work by the IMF which emphasises that persistent imbalances are largely driven by domestic macroeconomic forces – home grown persistent surpluses and deficits in spending and saving[18]. Second, I agree with Lighthizer that free trade is a force for prosperity if it rests on a level playing field, and that the trading system served the world economy well in the period of post-war adjustment up to at least the 1990s. But it has come under strain since then, and most recently we have been forcefully reminded that trade policy has to include a national security dimension. These two points – domestic macroeconomic forces and trade policy - are not incompatible. They sit together. My final point here is that to solve these issues we need authorities to come together and strengthen the rules of engagement in a multilateral setting.

Let me finish on the subject of AI. I hope I have established the basic argument that links together technological progress, trade and economic growth. I have also argued that we face other headwinds which make achieving stronger growth through that set of linkages more challenging but also even more necessary.

Is AI the next General Purpose Technology (GPT)? A GPT has the potential to be used across a wide part of the economy, like electricity for instance. It is not just a short-lived boost to productivity growth but rather a significant change which keeps improving and lowering costs and makes innovation across the economy easier. It should have a significant and prolonged positive impact on productivity growth, and will itself create new ideas, new products and new ways of doing things. AI appears to me to have that potential, and so it could over time lift growth rates and per capita national income.

In doing so, it should increase the productivity of labour, by both complementing the skills of labour and substituting for labour in some situations. In doing so, it will lead to the re-design of the content of jobs. Again, we can look to the Industrial Revolution for clues here. And, there is a particular Leicester dimension to this piece of history. Probably the most famous resistance movement to such technological change was the Luddites of the early nineteenth century.

Named after the mythical character – or at least unidentified – of Ned Ludd, they were largely made up of framework knitters who resisted the move to mechanised knitting machinery. Leicestershire was one of the centres of Luddite activity. Indeed, very sadly, a number of Luddites were hanged outside Leicester Gaol, almost in sight of where we are today[19].

There was no doubt transitional pain and suffering at the time, and there were not the public institutions and policies of support that we have today. But the Industrial Revolution did not lead to mass unemployment, and I do not believe this will be the case with AI. Moreover, as I said earlier, a big difference from the early nineteenth century to today is that we now have a population that is on average ageing, and the need to complement human labour with technology to support the productive potential of the economy (Y*) is more pressing. So, I am therefore of the view that we must facilitate the growth of AI as the most likely General Purpose Technology which can move the needle on growth in the economy. In doing so, we must also invest in new skills in the labour force- in our human capital.

To conclude, we face a necessary challenge to raise the potential growth rate of the economy. There are strong headwinds. The combination of technology and trade remains an essential route to increasing productivity. Adam Smith’s basic tenet is as true today as it was two hundred and more years ago. Growth also requires strong institutions and public policies to provide a supportive environment. Education and universities are part of that story – to

create and encourage the development of human capital so, too is a strong multilateral international institutional framework for economy policy, including trade policy. And, central banks are important too, with our strong commitment to monetary and financial stability.

Thank you.

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1. It is reasonable to wonder, why Y as the letter to denote income/output? The earliest source I know of is a letter written by Keynes in 1937 to a fellow economist, Sir John Hicks: “On one point of detail. I regret that you use the symbol I for income. One has to choose, of course, between using it for income or investment. But after trying both, I believe it is easier to use Y for income and I for investment”. So, there we are – it doesn’t explain why Y, but the great man’s view has stuck.
2. Simon Kuznets: Modern Economic Growth: Rate, Structure and Spread; Yale University Press, 1966
3. S N Broadberry, Campbell B, Klein A, Overton, M and van Leeuwen B: British Economic Growth, 1270-1870; Cambridge University Press, 2015.
4. N F R Crafts, Forging Ahead, Falling Behind and Fighting Back: British Economic Growth from the Industrial Revolution to the Financial Crisis; Cambridge University Press, 2018.
5. E. A Wrigley, Continuity, Chance and Change: The Character of the Industrial Revolution in England; (Cambridge University Press 1988) p9-11.
6. The classical economists believed in the stability of income levels not growth rates. They drew on the work of Thomas Malthus to conclude that economic growth following technological innovation would lead to an increase in population but not in income per person.
7. John Fernald, Robert Inklaar and Dimitroje Ruzic, “The Productivity Slowdown in Advanced Economies: Common Shocks or Common Trends”. Review of Income and Wealth, 2024, Vol 71, Issue 1.
8. Wrigley, P78, 82.
9. Gregory Clark; “What Made Britannia Great? How Much of the Rise of Britain to World Dominance by 1850 Does the Industrial Revolution Explain?” in Timothy J Hatton, Kevin H O’Rourke and Alan M Taylor: “The New Comparative Economic History, Essays in Honour of Jeffrey G Williamson. (MIT Press 2018) P33-58. E A Wrigley and Schofield R5, “The Population History of England, 1541-1871 (Cambridge University Press, 1981)
10. Adam Smith, “An Inquiry into the Nature and Causes of the Wealth of Nations, (Pelican, 1970).
11. Robert E Lucas, “Lectures on Economic Growth (Harvard University Press, 2002), P9, 10, 144.
12. Douglas A Irwin, “Clashing over Commerce: A History of US Trade Policy (University of Chicago Press, 2017).
13. Kevin H. O’Rourke and Williamson J.G. “Globalization and History: The Evolution of a Nineteenth Century Atlantic Economy. (MIT Press 1999). Ronald Finlay and O’Rourke, K.H. “Power and Plenty: Trade, War and the World Economy in the Second Millennium” (Princeton University Press, 2007).
14. Robert Lighthizer: “No Trade Is Free: Changing Course, Taking on China, and Helping America’s workers”, (Broadside Books 2023) p24.

15. Lighthizer, p26.

16. Lucas, P106.

17. Maurice Obstfeld and Taylor, Alan M, “Global Capital Markets: Integration, Crisis and Growth” (Cambridge University Press, 2004) p4.

18. Pierre-Olivier Gourinchas, Ceyla Pazarbasioglu, Krishna Srinivasan and Rodrigo Valdés; Trade Balances in China and the US are Largely Driven by Domestic Macro Forces”, IMF Blog, 12 September 2024.

19. Brian Bailey, “The Luddite Rebellion” (Sutton Publishing, 1998).

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