Abstract

Productivity comparisons need to be based on a careful definition of the objectives. Labour productivity per hour worked is the best measure of prosperity per effort at any time, but can sometimes be achieved at the expense of unemployment or low capital productivity. Total factory productivity is the nearest measure we have to absolute efficiency, but that does not mean that it is an appropriate policy maximand. Performance can, therefore only be compared by looking at several different measures. Using this conceptual background to compare American, French, German, and UK productivity, the author concludes that between the US and continental economies social choices and trade-offs are the key drivers of observed differences, but that the UK is still behind both the Continent and the US on absolute efficiency. The policy choices implied for the UK are explored.

Growth, Productivity and Employment

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Growth, Productivity and Employment

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1. Introduction

My topic is the comparison of productivity figures for the US, continental Europe (focusing on Germany and France) and the UK, and the links between productivity levels, growth rates, and levels of employment. This is of course a well-trodden ground. It is well-trodden ground in terms of the figure work, and I have certainly not attempted any new basic research for this paper, drawing my figures entirely from Mary O'Mahony's excellent study published by the National Institute for economic and Social Research[1]. And it is well-trodden ground in terms of polemics, with, broadly two schools of thought:

- A broadly left-of-centre school, which focuses on the supposedly superior performance of Germany and France and urges us to copy their higher levels of investment and skills - Will Hutton's "The State We're In" is a classic statement of that proposition.

- The "ultra liberal" school, which focuses on the supposedly superior performance of the US - and urges further market liberalisation as the route to match that superiority. The McKinsey report on productivity presented last year falls broadly in that camp.

My purpose is to throw some light on that controversy, and I have two essential messages:

- First, that to throw such light we need to be far more explicit than most commentators have been about the conceptual framework, about what different measures mean, which measures we should treat as maximands and which not, and why. For polemicists on either side have tended to approach this issue by highlighting the measure that proves their case, rather than making plain the fact that there is no single inherent absolute measure of success.

- Secondly, that the more you look at the issue, the more one is aware of trade-offs, of the social choices inherent in any debate about productivity growth and employment. And that the economist's task in this area is to illuminate the existence of those social choices, and to distinguish clearly between concepts and measures of absolute efficiency (which should always be

[1] Reference: Britain's Productivity Performance 1950-96, O'Mahony NIESR

maximised) and measures which involve social choice, where trade-offs need to be made, and should be made explicitly.

To make those points I would like to do four things:

1. To clarify measures, what are we trying to maximise and why, and which measures imply social choice trade-offs, which not.

2. Against that clearer conceptual framework, to set out the facts of relative performance according to different measures.

3. To suggest at least some of the explanations for the differences in performance we observe.

4. To suggest some definite 'so what's' for British policy, and some questions.

Equally, there are many issues of great and increasing relevance to productivity trends and improvement which I will not cover – and in particular the complex issues about how we measure productivity in services, and how we measure "investment" in a world where much "economic" investment (such as software, training, brand building and R&D) is in accounting terms expensed. Those are vitally important issues which threaten to reduce the validity of some of the analysis possible from conventional measures of productivity, though not I think to undermine it entirely.

2. Clarifying Measures

Let's begin with the basic question - what are we trying to measure, what are we trying to maximise?

Slide 2

One possible measure is output per hour worked - a measure on which the 'continentalists' (as I shall call them), are happy to focus, since on that basis France and Germany do very well, well ahead of the UK, ahead of the US at the total economy level, similar to the US for the market sector alone. This is clearly not a silly measure - since presumably we do want maximum output for minimum labour input, a maximum income for minimum hours worked - not a bad measure it would seem therefore of absolute efficiency, of prosperity, at any given point of time. But it's also clear that there are problems with this measure, and the "Atlanticists" (as I will call the ultra-liberals) reply with two objections - both somewhat valid, but both also more complex than the Atlanticists suggest.

Objection one is simply that you can swell labour productivity per hour worked, or per person employed, by having a low level of labour utilisation - a proposition illustrated by some simple geometry.

Slide 3
On the vertical axis output per unit of labour employed - on the horizontal, units of labour ranked by declining order of productivity - a function presumably of their skill level. Total output is equal to the area under the curve.

A country, which employs units of labour down to the very least productive, will maximise this area under the curve and thus maximise GDP.

Slide 4
The country which cuts off the employment of the least productive labour - for instance via a minimum wage, or trade union resistance to downward wage mobility, or other forms of labour market inflexibility - will increase productivity per person employed or per hour worked, but at the expense of total output and indeed of unemployment. And that, the Atlanticists will say, is precisely what France has done.

Slide 5
That France's high productivity per hour worked looks less impressive once you get to GDP per capita as a result of much lower hours worked per person, and of course there is quite a lot in that. France's high productivity is to a degree at the expense of high unemployment, though with a few important counter caveats.

First, that it is noticeable that even after these adjustments for hours worked, France and Germany still do better than the UK in per capita income, which means that their area under the curve is higher despite cutting off the tail of low skill low income labour, so that their whole schedule must be at a superior level. Second, that in assessing the performance of a country with fewer hours worked but higher productivity per hour worked, we must distinguish whether the non-working hours were unused voluntarily or not. By which I mean this:

Slide 6
That if you had a country which had the same involuntary level of unemployment as another, but had through free choice selected a different trade-off between leisure and income, whether via differences in, say, retirement ages, female participation rates, or hours worked, then if that country had higher productivity per hour worked than the other country it would in some absolute and meaningful sense be more productive, even if its GDP per capita was lower. Thus, provided the conditions in the left hand box of Slide 6 hold, GDP per capita of 96 can be better than GDP per capita of 100, if labour productivity is higher.

Which is simply to say that GDP per capita is no more an absolutely and valid measure of economic success than output per hour worked. And that if we must avoid the fallacy of lauding an economy which maximises output per hour at the expense of involuntary unemployment, we should equally be wary of assuming that more labour inputs are by definition good as long as they produce any marginal product.

For that would be a very odd proposition. It would be a very odd proposition in terms of economics - a positive desire to maximise inputs sitting ill with a science whose usual focus is the maximisation of outputs and the minimisation of inputs. And a strange proposition in social terms, a relentless desire to maximise income, not balanced by any sense of trade-off between leisure hours and income. But it is a proposition to which

some Atlanticists seem committed, when they point to France's low hours worked per person as by definition a form of economic failure. Low hours per person are only a form of economic failure if their unemployment is involuntary: if they are voluntarily not worked, they represent simply a different social choice on the leisure versus income trade-off. The difference between French and American hours worked almost certainly entails both a significant involuntary and a significant voluntary element.

So where are we? Well, so far after the "continentalists" pitch on productivity per hour, the "Atlanticists" counterattack and the "continentalists" counter caveats, we've established that neither productivity per hour worked, nor productivity per person employed, nor income per capita can be taken as an absolute measure of economic success.

Slides 7, 8 & 9

But it feels like some mix of these, along with a look at the level of involuntary unemployment is what we're after – output per hour worked as long as it's not at the expense of involuntary unemployment, and the proposition that although maximising average labour productivity by cutting off the low end of the labour supply curve is not superior, a higher labour productivity schedule is always better, ie for any given level of labour input greater labour productivity is always preferable whether or not the tail is cut off through labour market imperfections.

But the "Atlanticists" would not necessarily agree, for they have a second objection to a focus on labour productivity. Which says that even maximising the labour productivity schedule is not necessarily optimal if it is achieved at the cost of unnecessary capital inputs, ie that we cannot even assume that schedule A is better than schedule B, independent of how much capital was used .

Slide 10

We need to look at capital productivity as well and then combine capital and labour productivity into the ultimate measure, total factor productivity. And indeed, if we look at capital productivity it varies quite significantly between our four countries and as a result if we compare their performance on a total factor productivity basis we get a different relative ranking than when looking at labour productivity alone.

On this basis the US is the clear winner, and the UK is less far behind France and Germany than previously supposed, but still well behind the US. The US not the Continent should therefore, it is argued, be the model.

So is this right? Is capital productivity a relevant factor, and is total factor productivity an inherently better measure of performance than labour productivity? The answer like most things in this debate is more of a mix of yes and no than polemicists on either side like to pretend.

Clearly ceteris paribus, higher capital productivity is a good thing. Capital represents past investment, which represents past consumption foregone, and we want to get as high a return as possible on any given amount of consumption foregone.

Slide 11

Looking at the capital productivity schedule which is analogous to the labour productivity schedule, but now with units of capital on the horizontal axes, it must be the case that

everything else being equal Schedule A is better than Schedule B. And it is quite possible that the US is on a higher schedule than France and Germany, that it gets a higher return for any given amount of capital, because, for instance, it utilises its capital assets more intensively rather than leaving them unused overnight or at weekends.

Slide 12

But it is also possible that the US has higher capital productivity, not because it's on a higher schedule but because it sets a higher cut-off point of investment return, increasing capital productivity but possibly reducing labour productivity. And of course that might be an optimal thing to do. For it must be the case that down in the right-hand corner of the schedule you get at some point to an unattractively low return, but possible also that very low return projects still go ahead if, for instance, you have public sector entities making investments for prestige rather than return purposes, or private sector management able to pursue prestige rather than return due to the absence of effective shareholder control. And again it is possible that some of that may have occurred in, for instance, France, increasing attainable output and attainable labour productivity but at such a cost in foregone consumption but it was not a rational economic choice nor the investment level which individual French people would have selected if they had been given the overt choice.

But equally it is also possible that US capital investment has been constrained below a level which is in some sense optimal, for just as you can increase measured labour productivity by not employing the less productive units of labour - for instance via a minimum wage - so you can increase capital productivity by focusing on a small number of high return projects.

Slides 13 & 14

For instance, if the free-market intersection of supply and demand curves for savings is at a point representing a value of investment A, a government which successfully imposed a tax on investment returns would reduce the level of capital investment - to B on this chart. It would as a result have a lower GDP per capita, lower labour productivity, but higher capital productivity[2].

The same result could be achieved if managers were excessively risk averse, or applied arbitrarily high hurdle rates, because of taking a short term view, as in Will Hutton's attack on the Anglo-Saxon model.

So that stepping back, higher capital productivity in the US could be either the result of better productivity for any given level of capital (ie a higher capital productivity schedule) or a cut-off of the capital productivity schedule at what the continentalists claim is a suboptimal point - investment too low to drive labour productivity to desirable levels.

The problem is that there is no definitive way of deciding what the rational or best point on the capital productivity schedule is. Obviously there is some level of return on investment which is so low that it would be a waste to pursue it, but as between say

[2] Note: Strictly speaking the supply curve for savings intersects with the investment return schedule in any one year, and the capital stock represented on this slide is the accumulation of multiple years of investment. Slide 13 thus represents a simplified one period model. The implications of the analysis hold however for a multi period model.

points A and B, there is no definitive best or worst but an issue of social choice. If a country selects B it will, everything else being equal, have higher capital productivity, but lower labour productivity and lower GDP per capita. If it selects A it will have lower capital productivity but higher labour productivity and a higher GDP per capita.

You cannot get round this choice by claiming that one particular choice is either irrational or unsustainable. Which is what some Atlanticists try to do, implying either that the French and German savers have as it were being tricked into higher levels of savings or claiming that the choice of a lower return higher capital intensity combination is in some sense "unsustainable" in the face of the globalisation.

But these are not valid implications. For if it is true, as Will Hutton would assert, that there exist German privately owned Middelstandt companies who are willing to go on investing in their companies for lower returns than available to them in world capital markets, because of non-monetary benefits, such as pride of company continuity and growth, or a love of engineering excellence for its own sake, then Germany will ceteris paribus have a higher capital intensity and higher labour productivity but lower capital productivity, and there is nothing inherently unsustainable about that, no external force that can make it unsustainable. It may breakdown with changing social attitudes, but there is no economic logic that says that it has to.

Finally, on the subject of capital productivity, it's worth distinguishing two different comparisons we can make, a comparison of prosperity and a comparison of efficiency.

Quite a lot of the higher labour productivity we see in France may indeed be due to higher capital intensity, and that may in terms of absolute efficiency mean that the French are not as far ahead of the UK as we suppose. From an efficiency point of view labour productivity is a highly imperfect measure, and capital has to be brought into the picture. But from a prosperity point of view, labour productivity must be the true measure. In the sense that if you were to ask which is the most prosperous and productive country in 1999, the two relevant factors must be how much effort each individual has to put in and what they get back as income, with past capital investment irrelevant.

The fact that the French get greater income for much less work in 1999 may be explained by the fact that they deferred more consumption in the 1960s and 1970s and some of that savings may have been for relatively low return, but that explanation doesn't change the fact that right now in 1999 they achieve a more productive income-to-effort ratio. The fact that Germany and France are more labour productive now because they saved and invested more than the UK earlier, is an explanation not a denial of their current prosperity advantage.

So capital productivity, like labour productivity, is important but riddled with as many imperfections, and you don't escape those imperfections by focusing on total factor productivity. Some commentators seem to think you do - they pull-out total factor productivity with a sort of flourish - the real measure, the true measure of productivity - inherently better than labour productivity and at last the thing we must maximise and no doubt about it.

But I fear those who latch on to total factor productivity in that way simply don't understand what it is. It is a measure of relative productivity which asks how much of a

total difference in output levels is explained by differences in labour or capital inputs, with any remaining difference being the difference in total factor productivity.

Slides 15 & 16

Relative values can be calculated quite simply as a weighted average of labour and capital productivities as here in last summer's McKinsey report. Which means that TFP suffers from exactly the same deficiencies as labour and capital productivity. Higher labour productivity is not by definition good because you can increase it by simply not employing your less skilled workers. And higher capital productivity is not definitionally good because you can increase it by only picking a small number of high return projects, by applying an unreasonably high hurdle rate.

Slide 17

And total factor productivity which can be represented as here on the vertical axis, while labour and capital form two horizontal axes – the schedule being a plane not a line - can be increased by either minimising labour input or minimising capital input.

You can increase TFP by having a minimum wage which cuts off the employment of low skill labour. You can increase TFP by setting your hurdle rate high and minimising capital investment. TFP doesn't rescue us from the conceptual problems of labour productivity and capital productivity, it suffers from both simultaneously.

For any one given combination of labour and capital, higher TFP is always better, the higher the plane the better, but that's not the same as saying that a higher observed level of TFP is definitionally better, since the level of TFP reflects choice of position on the plane as well as the level of the plane. So TFP, contrary to many commentators is not a measure of absolute efficiency, though big differences in TFP do probably mean some differences in absolute efficiency, and trends in TPF are likely to be correlated to trends in absolute efficiency. Which means that there is in fact no definitive maximand in all this debate, and step one in thinking clearly is to realise that fact - rather than to alight on the particular measure which happens to support one's ideological predilections. There is no absolute measure of success, and neither higher labour productivity, nor higher GDP per capita, nor higher capital productivity, nor higher TFP are necessarily good. And the actually observable relativities of capital intensity and capital productivity, of labour input and labour productivity, reflect not merely differences in absolute efficiency, but social choices about the trade-off between present and future consumption, between leisure and income. We need to recognise that explicitly if we are to make valid comparisons.

3. Comparing Productivity Levels

So much then for the theory, but what, with all due caveats, do the figures suggest about the relative performance of the four countries?

Slide 18

Well, on a labour productivity per hour worked basis we have already seen the figures - Germany and France the leaders on a whole economy basis, France slipping a little and

the US rising when we look at market sector alone, the UK clearly behind on both measures.

Slide 19
But with France and Germany making a very different social choice about number of hours worked than the UK and the US, with the result that on a GDP per capita basis, the US is the clear leader, and France and Germany only 5, 15 percent ahead of the UK in prosperity.

Slide 20
And very different social choice too between France and Germany and the UK, and to a degree the US, on capital intensity (Slide 20), with Germany and France providing for each hour worked 30- 40 percent more capital investment than the UK, and 15 to 20 percent more than the US. Although achieving with this greater capital investment a much lower rate of capital productivity, either because of lower absolute efficiency, a lower schedule, or because that extra capital involves taking on additional low return project, going on down to the bottom right-hand corner of the capital productivity schedule.

Slide 21
A complex picture of a different relative positioning on different measures, and one which I think can be best undertook in terms of the following framework, which distinguishes between the countries on three dimensions.

- In the top left hand box "Output for the same capital and labour" input, ie absolute efficiency.
- In the middle box – capital intensity, a product of past prosperity and social choice of the investment rate.
- At the bottom, of the investment rate labour input per capita, a product of social choice.

The first two bullets combine to determine labour productivity.

Labour productivity and hours worked combining to produce GDP per capita

Slide 22
Comparing on this framework first US versus France and Germany, it seems highly likely that the US is somewhat ahead in terms of absolute efficiency. One cannot be definite on this and we certainly cannot be definite on the magnitude of the US advantage, because we have no macro measure of absolute efficiency. Absolute efficiency is output achieved for the same quantity of capital and labour and none of the measures we have looked at measures that precisely. Total factor productivity is the nearest measure, but as we have seen is still not a precise measure of absolute efficiency.

But it is nevertheless a reasonable assumption that the US is ahead in absolute efficiency, both because micro level case-by-case evidence suggests that, and because at the macro level, as shown here, France and Germany achieve only a 6-9 percent labour

productivity advantage despite 10-30 percent higher capital intensity, implying that they are on lower capital productivity schedule than the US, not just a different more capital intensive point. The US absolute efficiency advantage may be quite small, perhaps only 5 and at most 10 percent, but it does appear to be there.

That higher absolute efficiency advantage is, however, offset by France and Germany's higher capital intensity, and capital intensity of course reflects two factors, past prosperity, the past level of income out of which investment was saved, and social choice - the rate of investment. In this case of France and Germany's higher capital stock reflects higher investment rates, since total income levels out of which to save have always been somewhat lower than the US.

Finally, in the bottom box we bring in the other dimension of social choice, hours worked. The US deciding to work 30-40 percent more per person, translating to a slightly lower 20-30 percent income advantage, given France and Germany's 6-9 percent labour productivity advantage at the total economy level. In summary therefore, the US is absolutely more efficient than France and Germany - but with France and Germany choosing to invest more but work less.

Slide 23

Using the same framework to compare France and Germany versus the UK suggests the following picture:

- The comparison of absolute efficiency unclear, though probably Germany and France slightly ahead.
- The UK 30-50 percent behind in capital intensity, reflecting past prosperity and investment rates.
- the UK therefore 20-30 percent behind in labour productivity, but offsetting about half of that advantage by working 10-20 percent harder.

So similar absolute efficiency, more continental investment, more UK hours worked.

Slide 24

And finally and most simply US versus the UK.

- The US undoubtedly ahead on absolute efficiency
- 20-30 percent more capital intensive
- Working 10 to 15 percent more hours per capita even than the British
- With a resulting GDP per capita advantage of 35-40 percent.

4. Explanations of Difference

All of which suggests two key questions:

Slide 25

- Why is the US ahead of both Britain and France and Germany in absolute efficiency?
- Why has Britain made different social choices than France or Germany in respect to levels of investment and hours worked?

First then, why is the US ahead in absolute efficiency? Well, part of the story is simply historical. The US was, for all sorts of reasons, well ahead of all European countries in the 1950s, and it simply takes time to catch up. Best practice transfer mechanisms across the world, via ownership links, copying, consultants providing ideas, bench marking, etc are in the long run powerful, but they take time.

Slide 26

And so part of the story is simply that Germany and France and the UK have been catching up with the US, but they haven't got there yet. (This slide shows total factor productivity, and I repeat my caveat that TFP is not a perfect measure of absolute efficiency, but it bears some relationship to absolute efficiency and its relative trends are highly correlated to absolute efficiency.)

But it is also noticeable from this slide that the pace of catch-up for France and Germany seems to have slowed down significantly or perhaps stalled completely. And it is therefore possible, and I suspect likely, that there will exist in the future a small US absolute efficiency advantage - perhaps no more than 5 percent - which does not disappear through the process of catch-up.

Why might that be? Well I think the reasons are fairly obvious. For the US has two large and inherent advantages over the European economies which have a significant impact on productivity.

Slide 27

The first is a very large single market. A market of 270 million people speaking the same language, with a more homogeneous culture than Europe, more homogeneous legal and accounting and tax systems, and one currency. And all those factors must imply lower overheads and administrative costs, greater economies of scale in production and marketing, and increased competitive intensity and contestability of markets, putting greater pressure on management to improve performance. It is probably impossible to make any precise measure of the scale of productivity advantage resulting, but it is difficult to imagine that it would fail to produce an advantage of several percentage points.

Slide 28

The second inherent advantage is low population density, an economic factor which I believe has received inadequate attention in productivity debates. Lower population density, means a lower cost of land, it means you can use more land more freely in

manufacturing facility design, in retail outlets, in distribution centres. And it means that there is less public pressure against green field development, and less need for more expensive and difficult brown field development. And those facts are bound to have a pervasive effect on absolute efficiency, on the output available from any given quantity of capital and labour. Retail and hotel operations which can be designed without space constraints are inherently more efficient because of better physical layout. Less physical congestion in distribution - wider more open roads - allows larger manufacturing plants and larger delivery volumes in larger trucks to larger retail stores, a key explanation, along with a large homogeneous market, of O'Mahony and Mason's finding that larger batch size is a significant factor in superior US manufacturing productivity[3]. Less opposition to green field development makes it easier for new clusters of related economic activity to develop. And less opposition to green field development increases further contestability of markets, for instance in the retail sector.

As with the large and homogeneous single market, it would be difficult or impossible to measure the impact of these factors precisely, but difficult to imagine the impact being less than several percentage points. So that if we are looking for an explanation of a US absolute efficiency advantage of perhaps 5-10 percent, I suspect the answers are staring us in the face, the combination of a large homogeneous single market and the lower population density highly likely to produce an inherent advantage of that magnitude.

Slide 29

The difficult question is not why the advantages are there, but what to do about them, and here we face two questions, whether it is possible to match the US advantage, and whether it is desirable. On the large homogeneous single market, the answer is surely that it is desirable, as far as possible, for us to match the US advantages. That means completing the single market in Europe, removing remaining barriers to competition, aiming for more harmonised accounting and legal rules, and perhaps entering the single currency if we are convinced that the micro supply side benefits offset any macro risks. But we must be realistic that however hard we try, barriers of language and culture will still make the European single market less complete, less competitive and less amenable to economies of scale than the US.

On the impact of low population density, the question is both is it possible and is it desirable, as much a question of social choice as of economic efficiency. By which I mean this: we cannot make ourselves less densely populated, but we do make decisions about how we face the inevitable economic cost of that density.

If we have a lax attitude to green field development, whether of roads, or of retail stores, or of housing, we will get somewhat closer to replicating the conditions conducive to high productivity and to the formation of business clusters we see in the US, though it is unlikely that we would ever match them completely. But we would do so at the expense of an environmental impact which many would oppose. That environmental impact is usually thought of in qualitative terms, but it is a real cost which also sometimes takes measurable economic form, a decline in housing values produced by a nearby road development being a measure of that cost, and Nimbyism therefore not

[3] Reference: Mason and O'Mahony's (1997) NIESR Discussion Paper No.124

irrational non-economic behaviour, but a perfectly rational economic motivation, an attempt to protect value via political pressures in a context where property rights cannot capture and are not compensated for the loss of environmental benefits and where therefore a purely market based route to value maximisation is not available.

So we face a trade-off, and a social choice, and the job of the economist is to illustrate social choice, not to deny it. So that one possibility, faced with at least part of the absolute efficiency advantage that the US enjoys, is simply to accept it as inherent.

Slide 30

This would not be catastrophic because:

- It does not mean accepting a lower rate of growth in productivity and prosperity.
- It does not constrain the UK from catching up productivity at least to the levels of the French and Germans, growing above the US rate of increase for several years.
- It is not a constraint on employment creation, since productivity and employment creation is two different challenges of economic policy, not the same and not correlated.
- It would mean accepting a permanent US advantage in absolute efficiency of perhaps five percent, perhaps a bit more, implying a similar advantage in GDP per capita if all other factors are equal.

The role of the economist is to inform that choice with best estimates of magnitude, but not to imply that there is no choice.

So much for the US comparison, the second question posed was why the UK had made such different social choices than France and Germany in respect of investment levels and hours worked. And again it's important to start with an historical context, a context of improving relative UK performance.

Slide 31

The UK's total factor productivity, after falling well behind French and German levels between 1950 to 1980, has in fact caught up significantly in the past 15 years, reflecting a closing of the absolute efficiency gap, with privatisation, better industrial relations, a reborn will to manage, inward investment bringing better management practice, and the impact of European single market competition, all increasing UK absolute efficiency.

Slides 32 & 33

There’s an important historical pattern too in relation to capital intensity with, for instance, Germany's relative capital intensity advantage being the product of higher investment levels in the 1950s, 60s and 70s, and with that advantage now constant or even slightly falling, since UK business investment as a percentage of GDP is now slightly higher than either French or German - though government investment is still lower. So that the causes of higher French and German investment, the differences in social choice, now in a sense lie in the past.

But it is still important to analyse why that difference occurred, not only as an exercise of economic history, but because the UK rate of investment still remains

inadequate to close the capital intensity and productivity gap. For if the UK simply invests at the same rate as France, Germany and the US, the capital stock gap, while not growing in percentage terms, will simply stay stable. We need to invest a higher percentage of GDP to close the gap. And if all other factors are equal the free-market equilibrium ought to produce that higher investment. Because if skills, financial market behaviour, and managerial attitudes are similar, and if there are efficient mechanisms for the transfer of both best practice and capital, a country with a currently lower productivity rate ought to attract a higher level of investment since the opportunities for high return on investment should be greatest in that country. We are beginning to see that effect, but it needs to go further if we are to close the gap, so it's important to understand why the historical difference and why the recent more favourable trend.

So why has the UK had a lower tendency to invest than the Continent? And why indeed, a perhaps related question, has it chosen or ended up with higher hours worked? Well, the answers are multi-faceted and disputed, and I cannot in this paper attempt any proof of a particular theory. But let me at least set out one story which appears to fit both macro figures and micro level anecdote. A story which involves complex cycles of self reinforcing factors, both in the arena of macro-economic and financial influences, and in respect to labour and capital factor costs and incentives.

Slide 34

In the macro and financial arena, it seems clear that for much of the post-war period, the UK macro economy was simply more volatile than major continental competitors, with more volatile rates of inflation and growth. And that volatility seems to have been both a cause and effect in a cycle which involved more risk averse short-termist behaviour, lower investment, lower growth, and higher inflation and volatile exchange rates as a result.

Certainly it was the perception of many in British business until the last five years or so, that they were subject to such macro-economic uncertainty - booms and busts - that short-termism was a perfect logical reaction.

Slide 35

As for what the basic causes of that cycle were, the exogenous rather than dependent variables, accounts differ. Will Hutton would argue that the relationships between finance and management created a short-termist culture independent of macro volatility, and that this was the exogenous variable. Others would focus on the issues of labour and capital cost and quality to which I will turn in a minute. Some to our late entry to the Common market, failing to create competitive pressure for change and investment in the 1950s and 1960s, some to poor management and poor industrial relations, others simply to poor macro-economic policy.

I am not going to attempt in this paper to judge between those competing explanations of the independent variables, but suggest instead that whatever the initial cause it was the cyclical reinforcement of these factors which was crucial.

Slides 36 & 37

Those macro and financial factors then interlocked, I suggest, with characteristics of the labour and capital markets which made continental economies both more capital

intensive and less labour-intensive than the UK's. From the macro and financial factors already considered, and from higher skills, came higher continental productivity and higher real wages, and those then combined with two other forces to make continental decisions on capital versus labour substitution quite different from those we saw in the UK.

- One of those factors was continental tax systems which have been strongly favourable to capital investment and strongly unfavourable to the employment of labour.
- The other was labour market inflexibility - minimum wages set high, significant trade union power, restraints on firing labour which made management averse to hiring it - different inflexibilities in different countries - but all tending to create a strong management preference for capital investment rather than labour input, creating higher investment and higher productivity but also lower employment, both in terms of lower hours worked and higher unemployment.

That picture fits both the macro facts and the micro level anecdotes. Ask any UK car manufacturer with plants also in Germany, why productivity per hour worked in the UK is lower and you will usually get two responses - low skills and lower capital investment. Ask why this same company has invested less in its British than in its German plants, and part of the answer will typically be that higher German wages and the danger of high exit costs from employment mean that the investment case for labour minimising investment usually looks better in the German plant.

Ask a multinational company with numerous product lines which they manufacture in the UK and which on the Continent, and the pattern is often explained by this cycle and contributes to this cycle - long batch run, higher volume lines in highly automated continental plants, shorter runs and products requiring more frequent line changes and more labour input in less capital intensive UK plants. Which of course suggests that the continental model has downsides, that its higher productivity may well have been at the inevitable cost of higher unemployment, with the social choice of lower German and French hours worked part involuntary as well as part voluntary. An example again of the trade-offs involved in this area of policy, and raising some complex questions about optimal policy, questions however which I will have to leave for another day.

5. So What's and Open Questions

My aim has been to explore some of the complexities involved in this debate on productivity, and to illustrate that the choice of optimal policy cannot assume either one self-evidently correct maximand, nor a sole path to achieve that objective. We are not just dealing with absolute efficiency but with social choice.

I started with two potential models, which different protagonists claim the UK should pursue.

Slide 38
The essence of those models, compared to the UK, can be captured by using figures again taken from O'Mahony.

- Germany on these figures is 27 percent more productive than the UK, primarily because of superior skills and greater capital investment, but to a much smaller extent because of an absolute efficiency advantage - the residual in this calculation.
- The US is 21 percent more productive, and here the key causes is not capital nor skills, but the residual, ie absolute efficiency.

Slightly different figures to those we saw earlier but telling the same basic story - the US ahead in absolute efficiency; the continent investing more in capital and in skills (though I have not investigated that skills issue in this paper).

I have suggested some of the reasons for that higher absolute efficiency in the US, and for higher capital investment on the Continent.

Slide 39
The analysis suggests some common and agreed measures to enhance UK productivity but also some choices.

- It implies that measures to make the European single market as complete and deep as possible, and measures to make product markets as competitive as possible, will help to narrow (though not eliminate), the absolute efficiency gap between the UK and US (and indeed between the Continent and the US).
- The figures show that increased capital investment is essential to closing the productivity gaps, and the vital importance therefore of macro-economic stability and of government capital investment.

But beyond that common core the analysis suggests some trade-offs and choices.

- The continental model implying still higher capital investment and skills investment, but raising questions about whether any levers to encourage capital investment exist in a global market, and about whether and how the Continental high investment model can be made compatible with full employment.
- Or the US model implying physical deregulation - easier planning rules - but with questions about how much of the gap we could close via that route and whether it is desirable.

Both choices can be informed by economic analysis but they are choices, and choices which should be debated, not hidden by the assumption that there is one correct measure of economic success or one correct route to achieve it.

References

Mason & O'Mahony M. (1997), NIESR Discussion Paper No. 124

O'Mahony NIESR 'Britain's Productivity Performance 1950-96

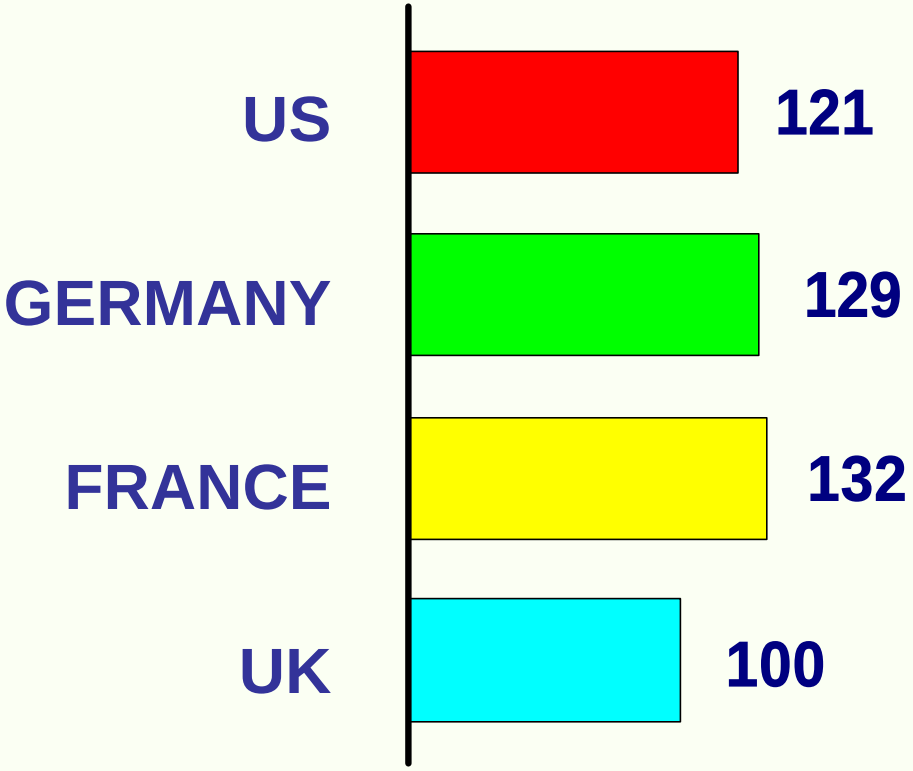
Growth, Productivity and Employment

Adair Turner

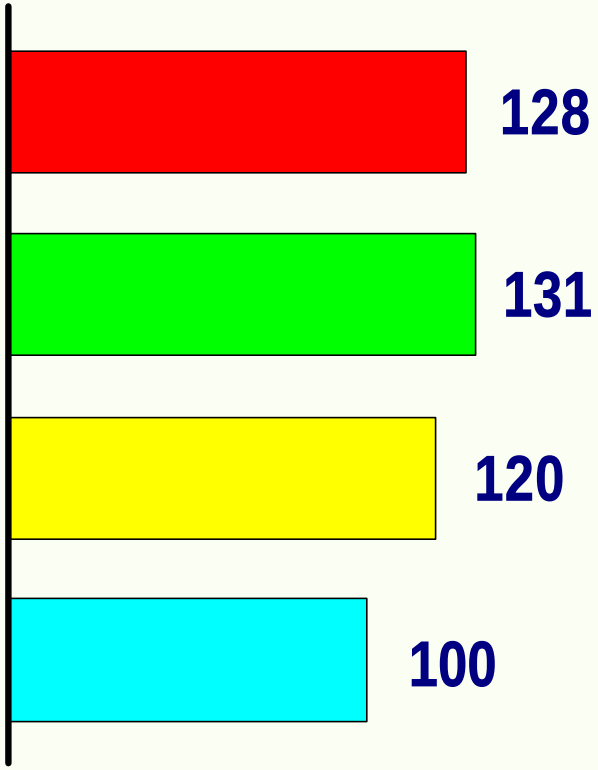
18 October 1999

Slides 2 - 39

GDP per hour worked 1996

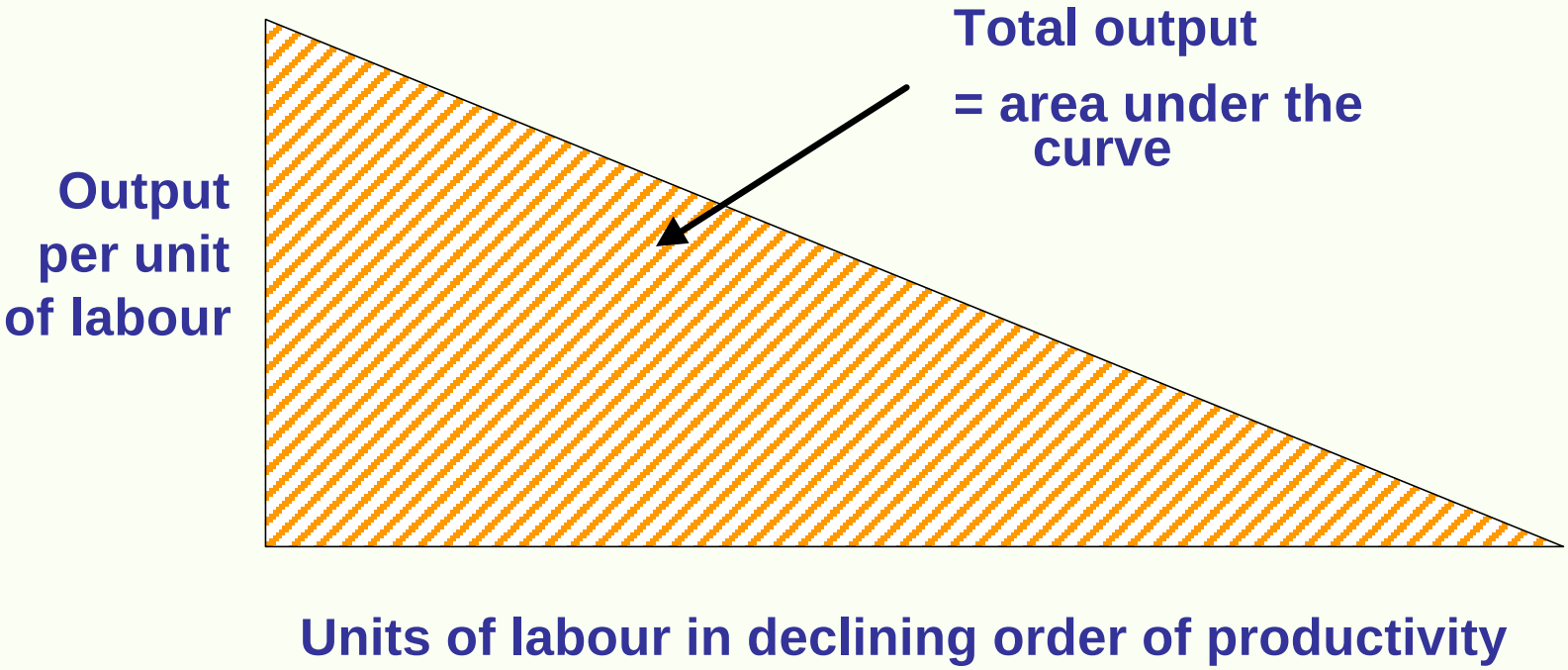


Market output per hour worked 1996

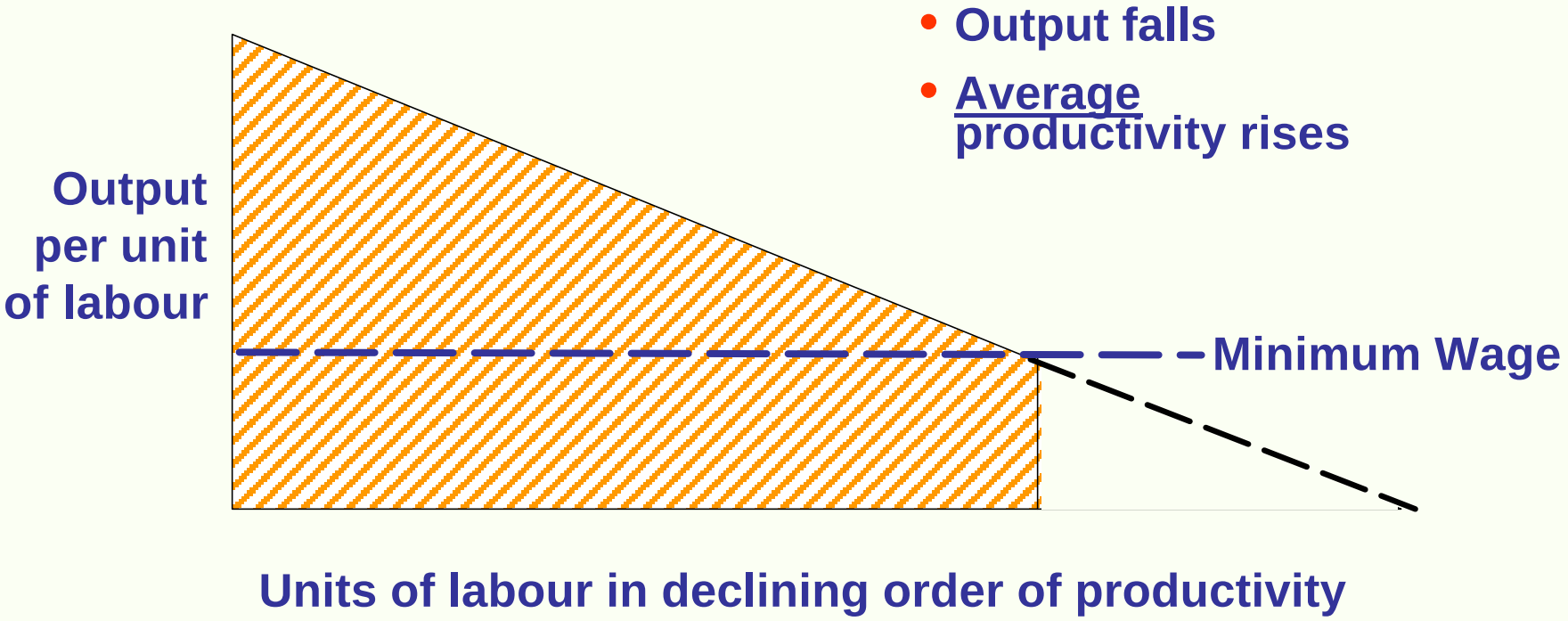


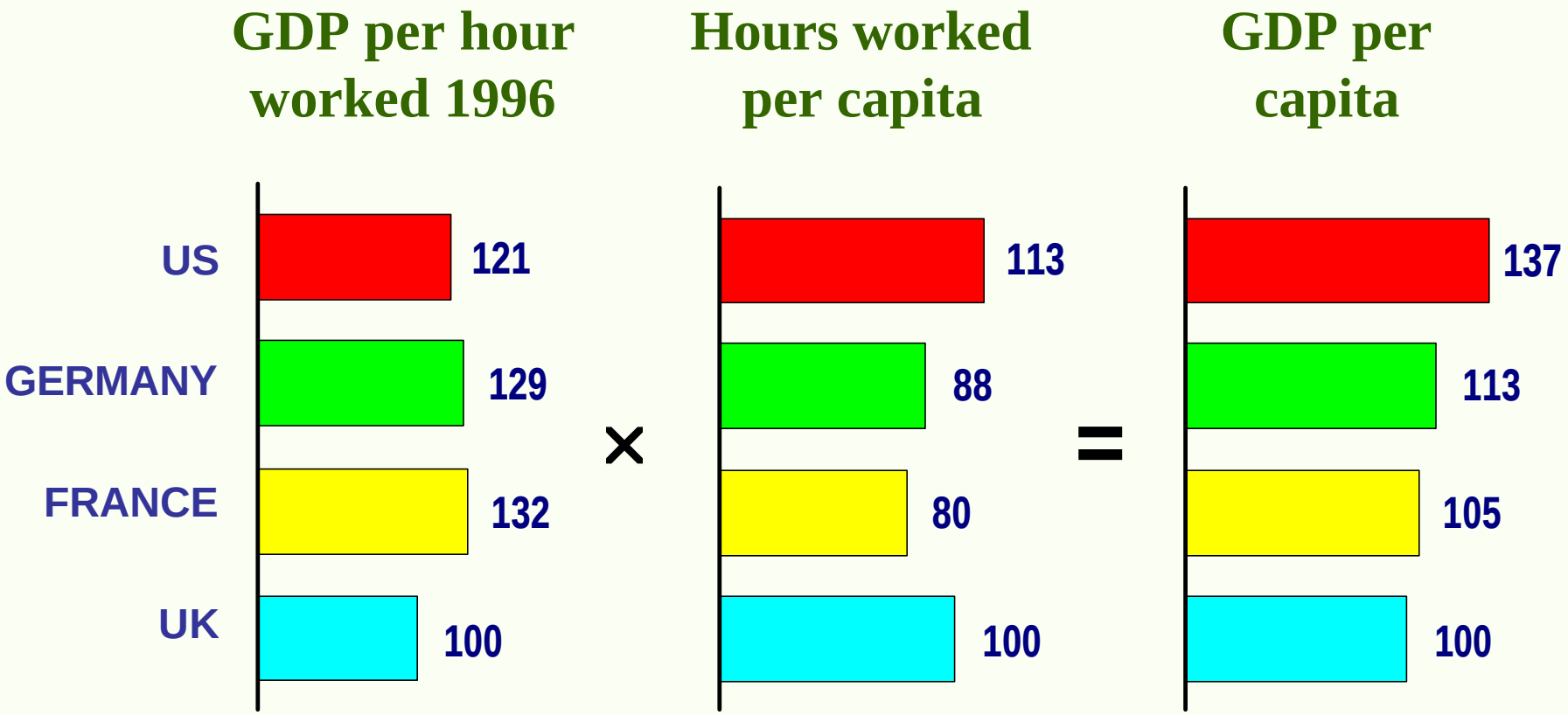
Source: O'Mahony, NIESR

Marginal Productivity of Labour Schedule



Marginal Productivity of Labour Schedule





Source: O'Mahony, NIESR

If levels of involuntary unemployment are equal with any difference in hours worked per capita arising from different voluntary leisure/income trade-offs

Then

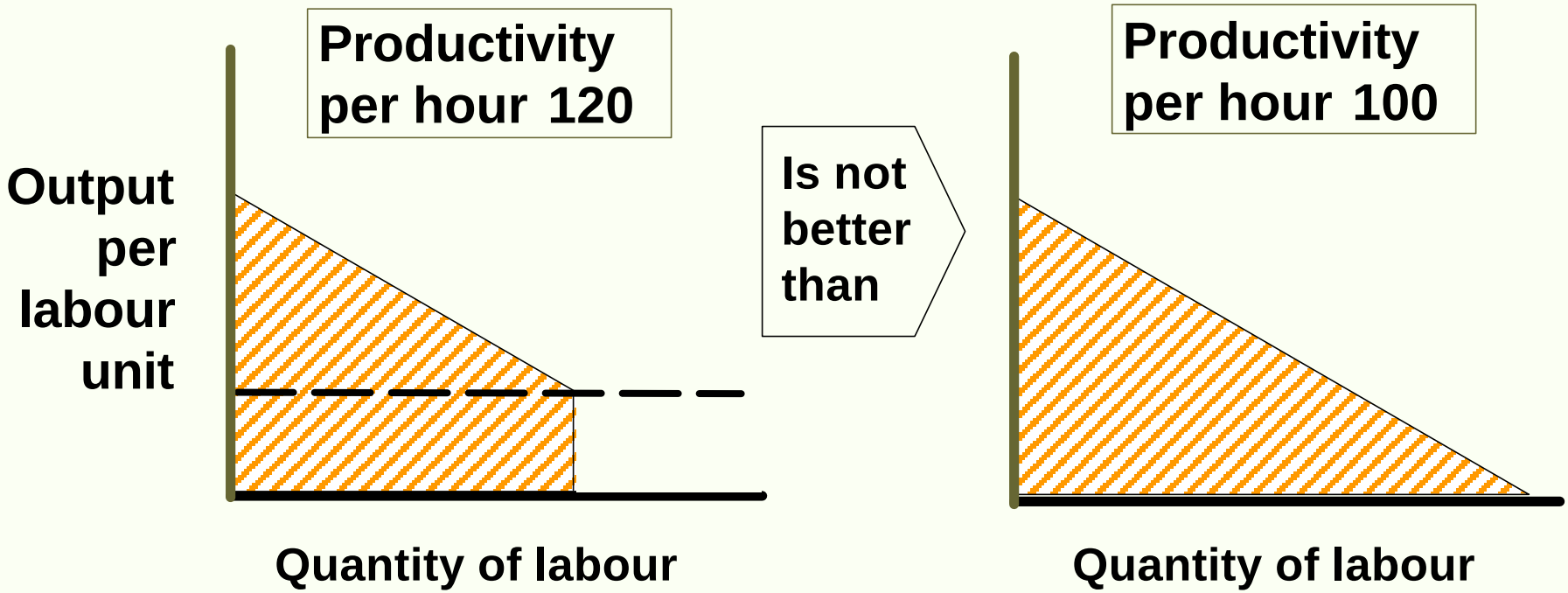
Country A

- **Productivity per hour 120**
- **Hours worked 80**
- **GDP per capita 96**

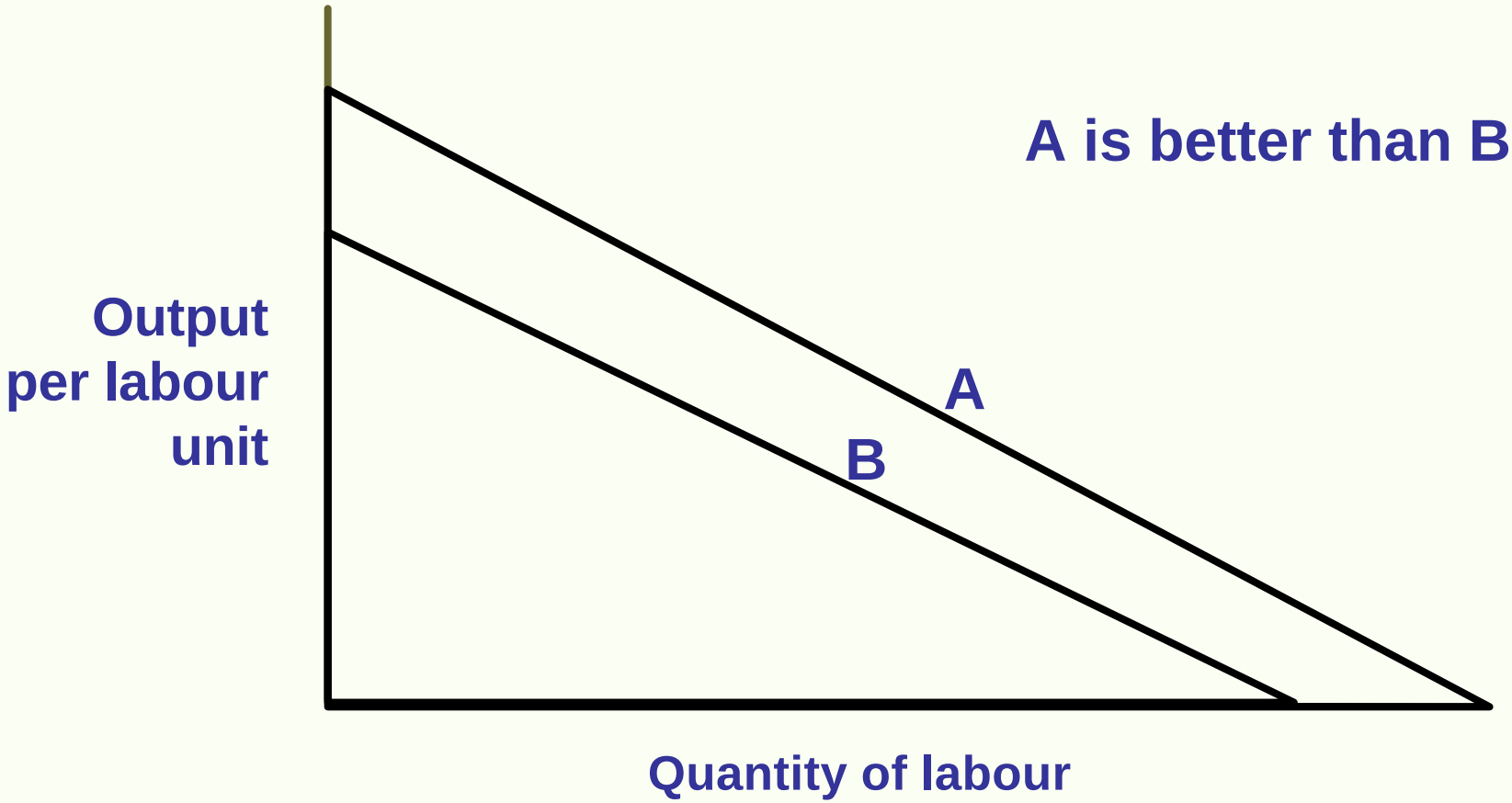
Is a superior economic performance than

- **Productivity per hour 100**
- **Hours worked 100**
- **GDP per capita 100**

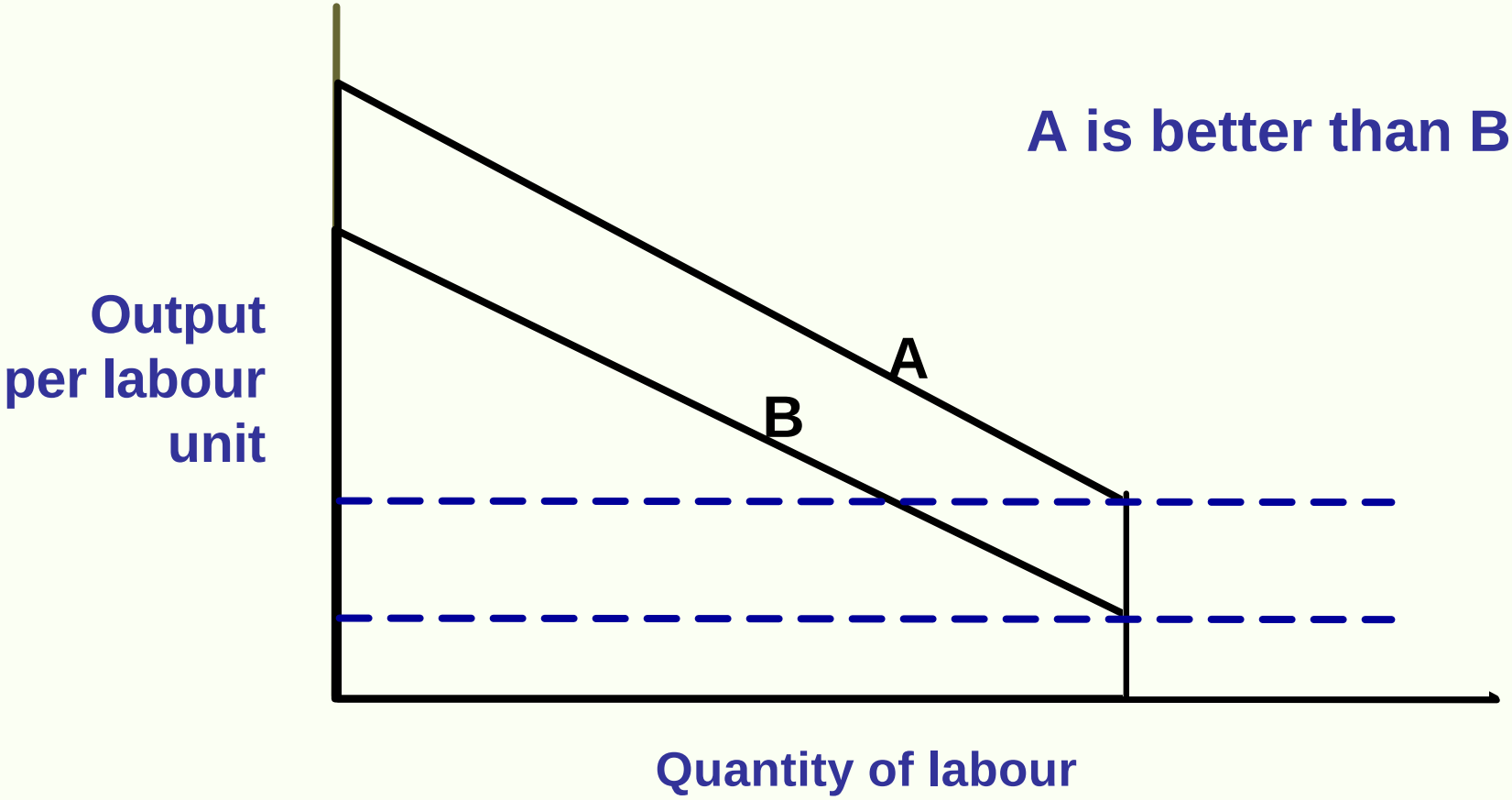
Productivity per hour worked not a maximand



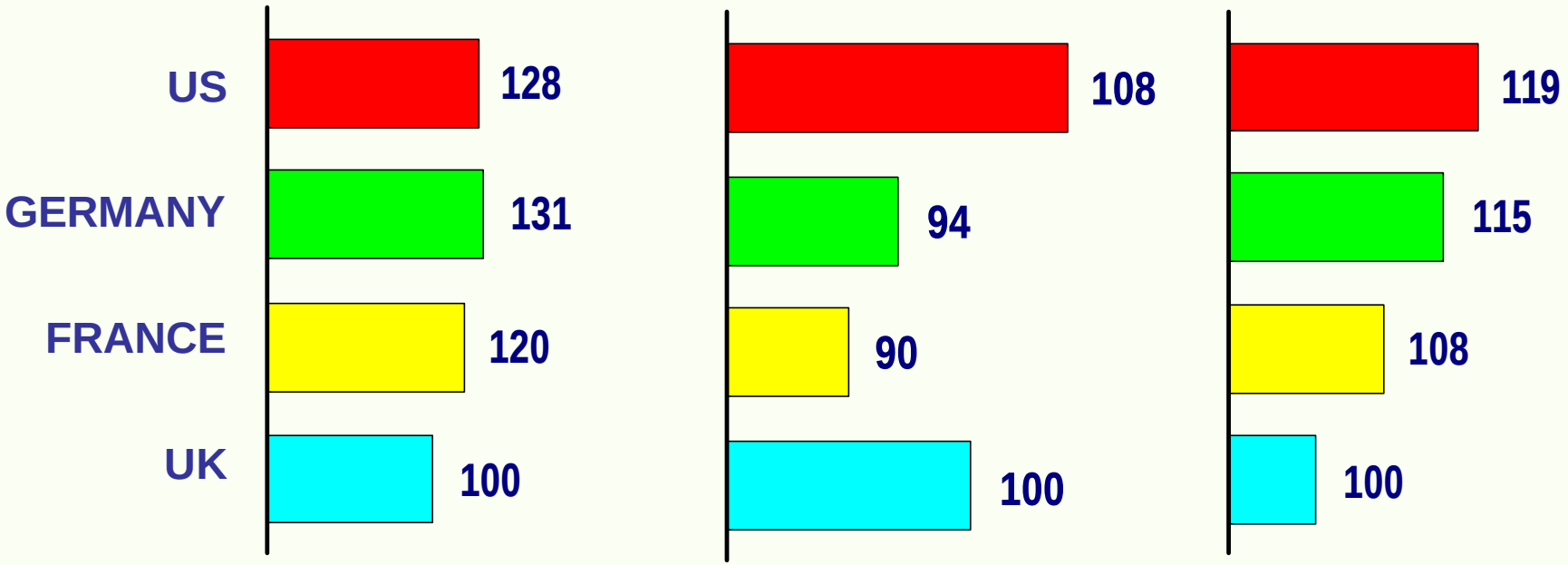
But Labour Productivity <u>Schedule</u> is ?



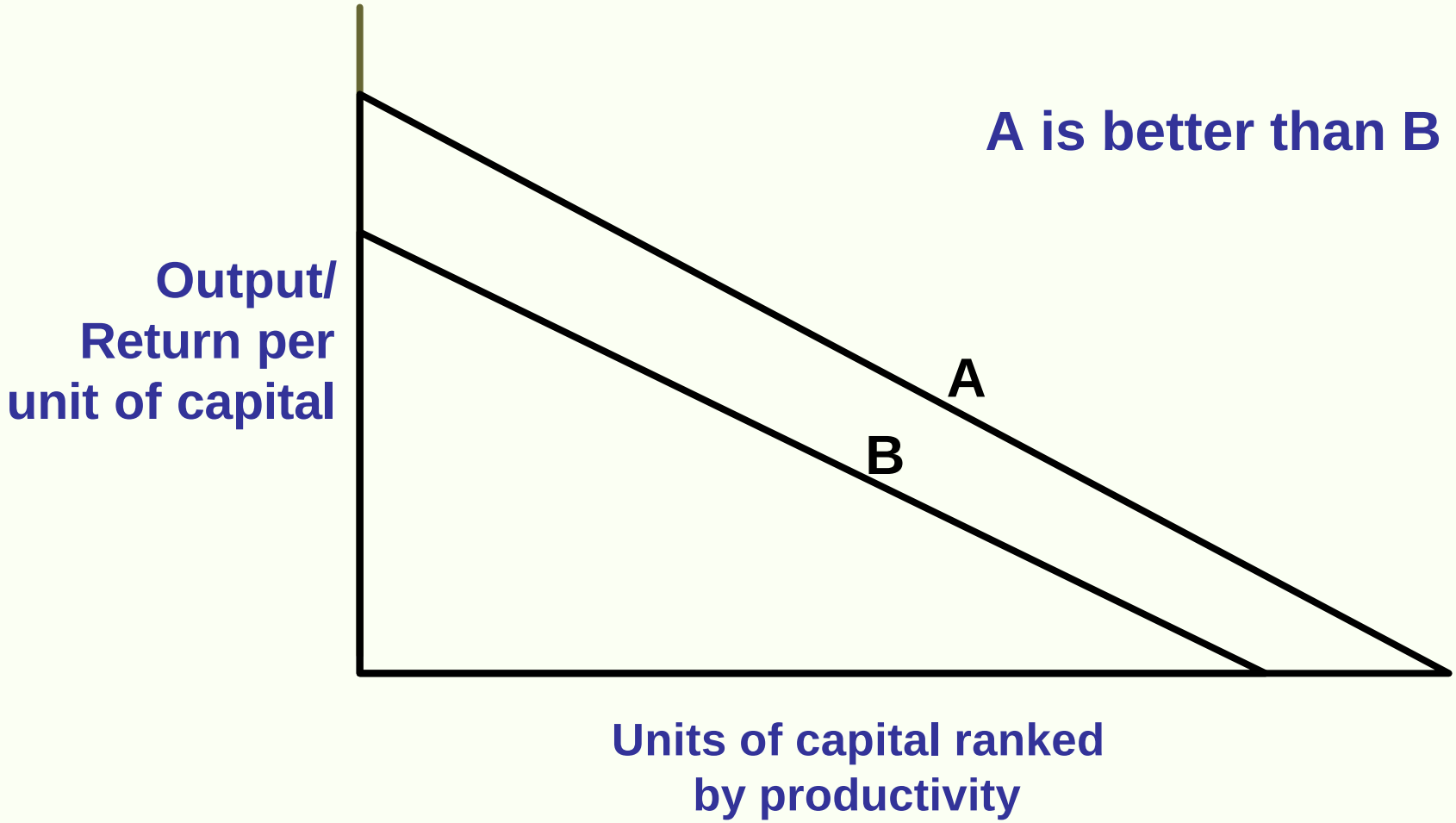
But Labour Productivity Schedule is ?



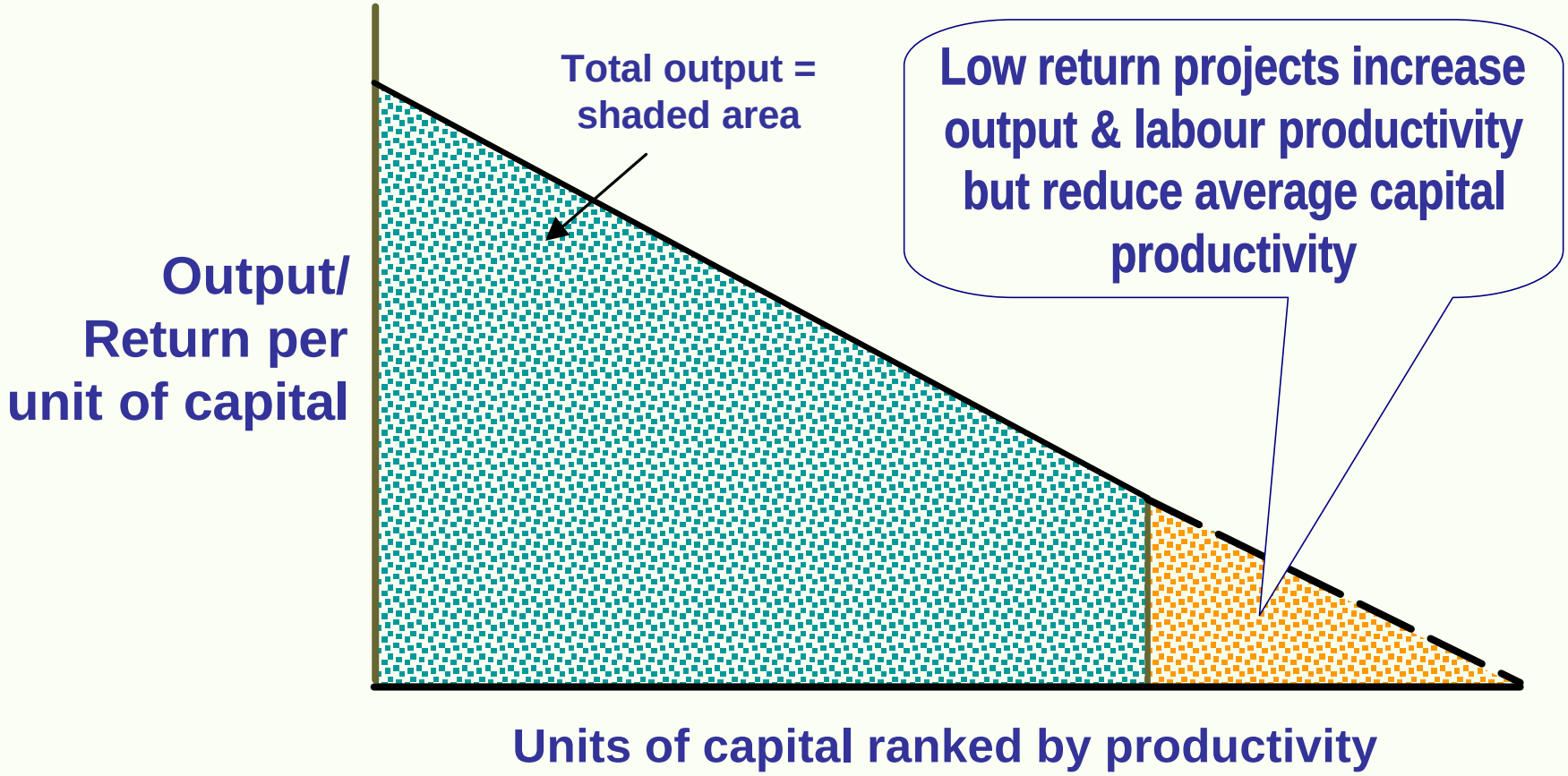
Labour, capital and total factor productivity - Market sector



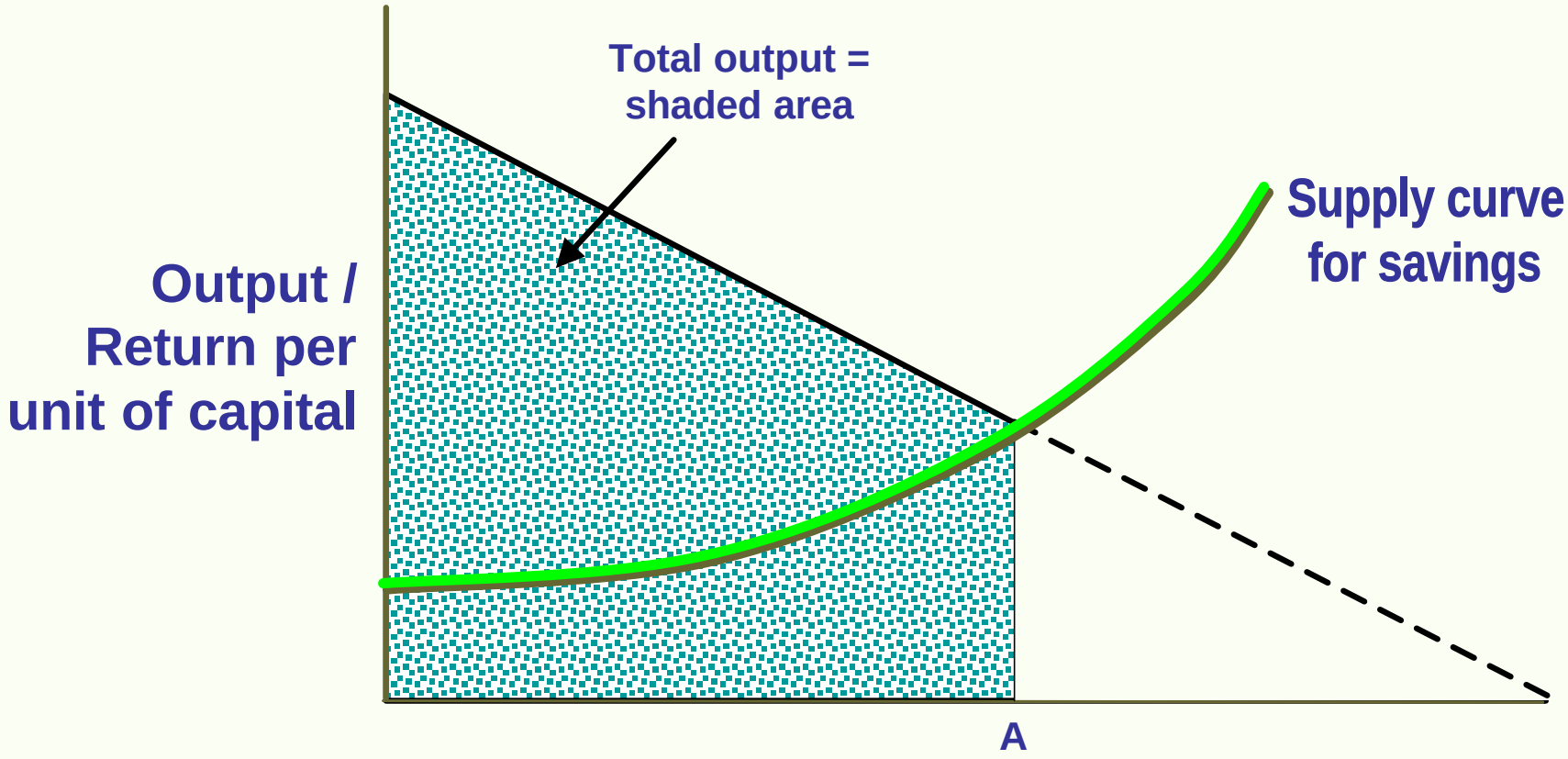
Marginal Productivity of Capital



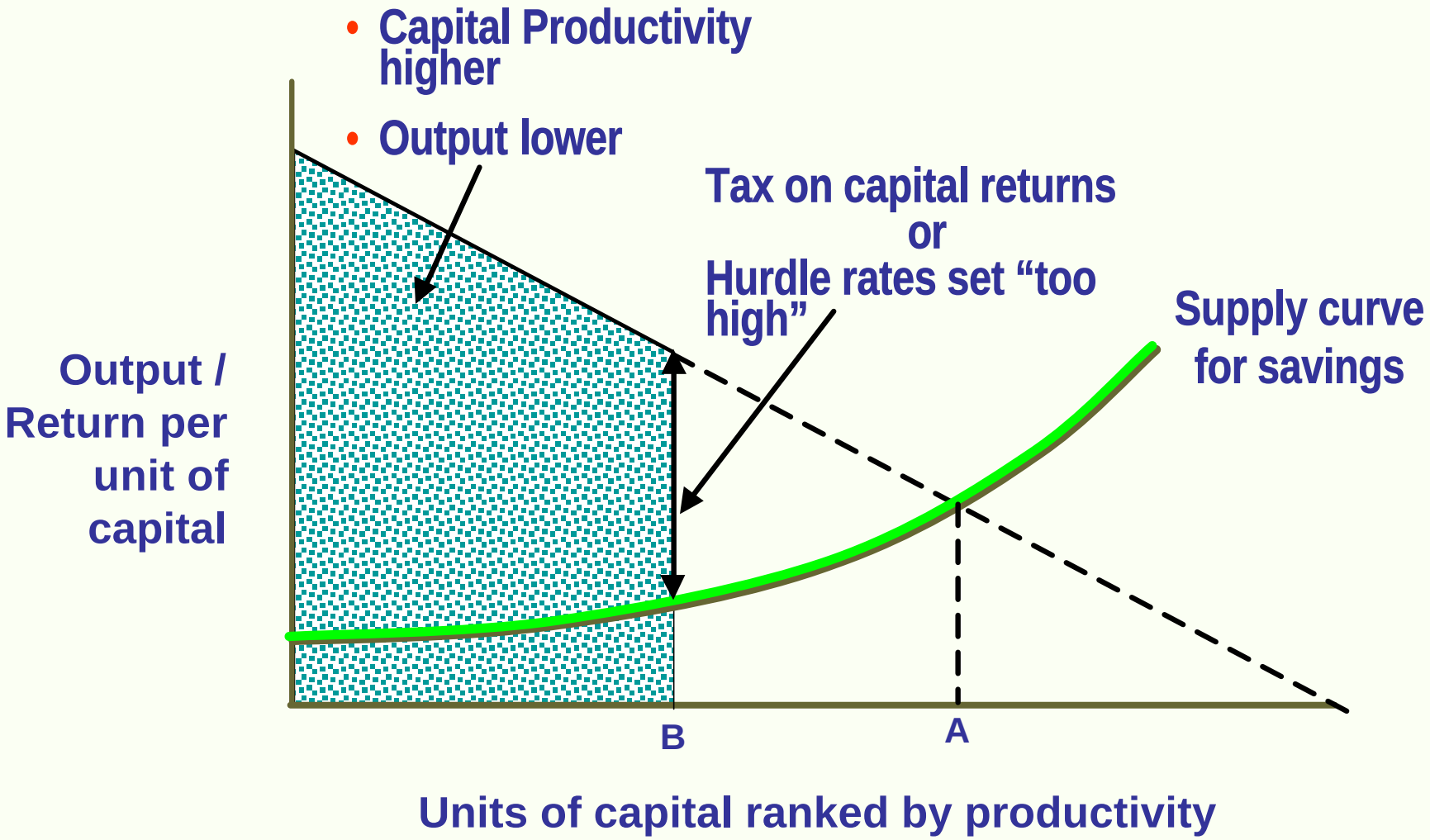
Marginal Productivity of Capital



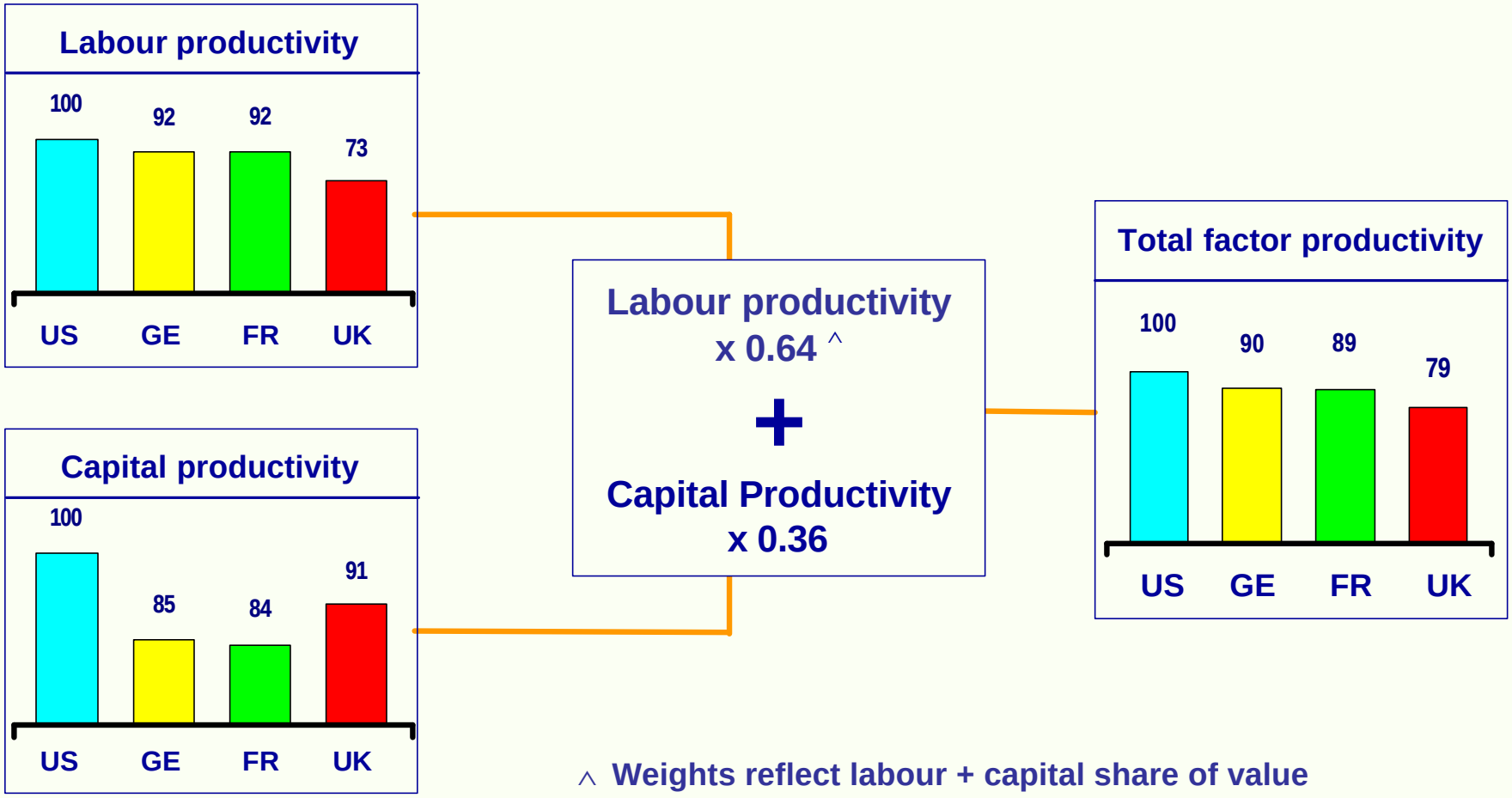
Marginal Productivity of Capital



Increasing capital activity and reducing growth/income



Total Factor Productivity, Market Sector 1994-96
Indexed to US = 100

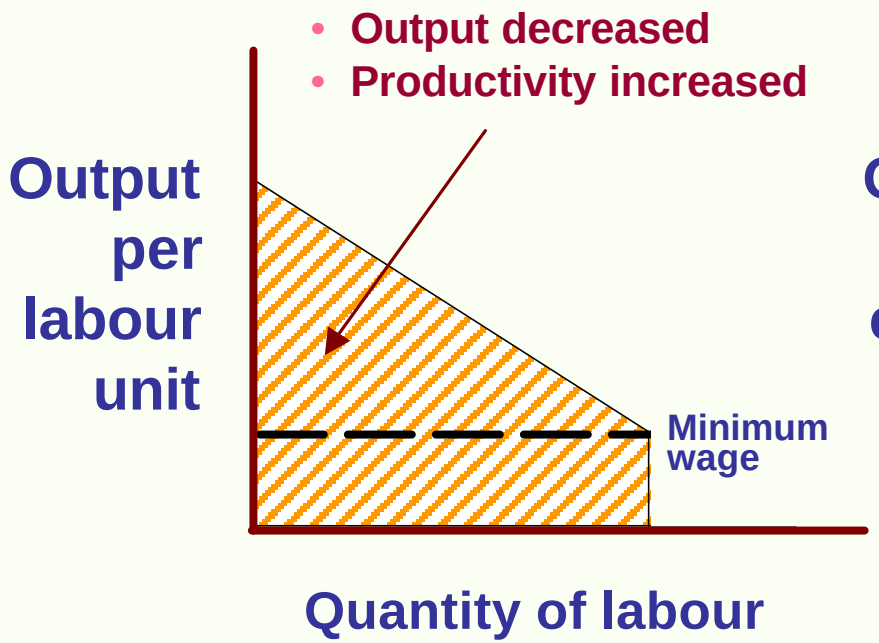


^ Weights reflect labour + capital share of value added/income : average for four countries

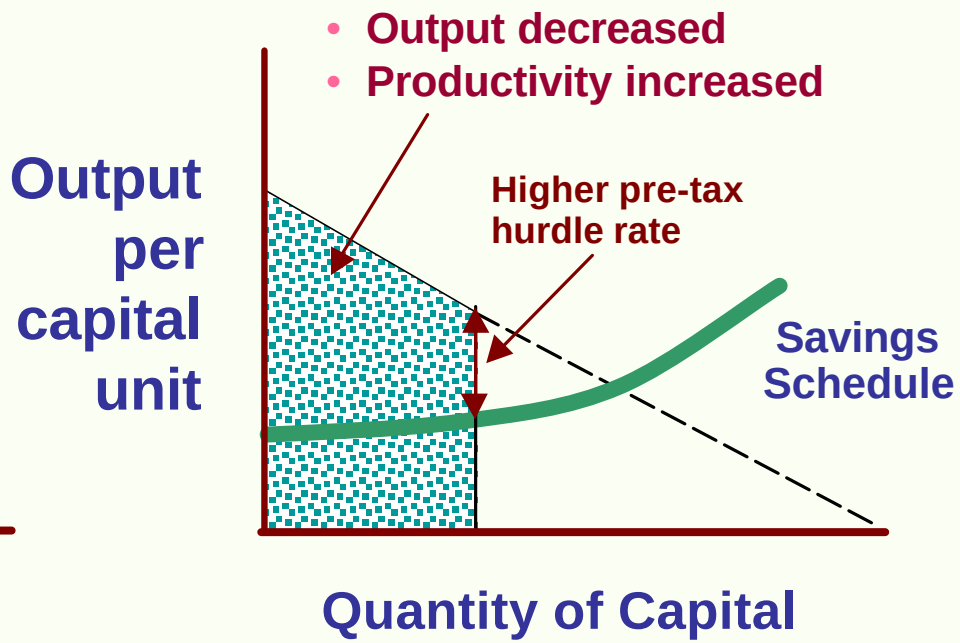
Source: McKinsey, 1998

Labour & Capital Productivity Increased at Expense of Output

Labour Productivity

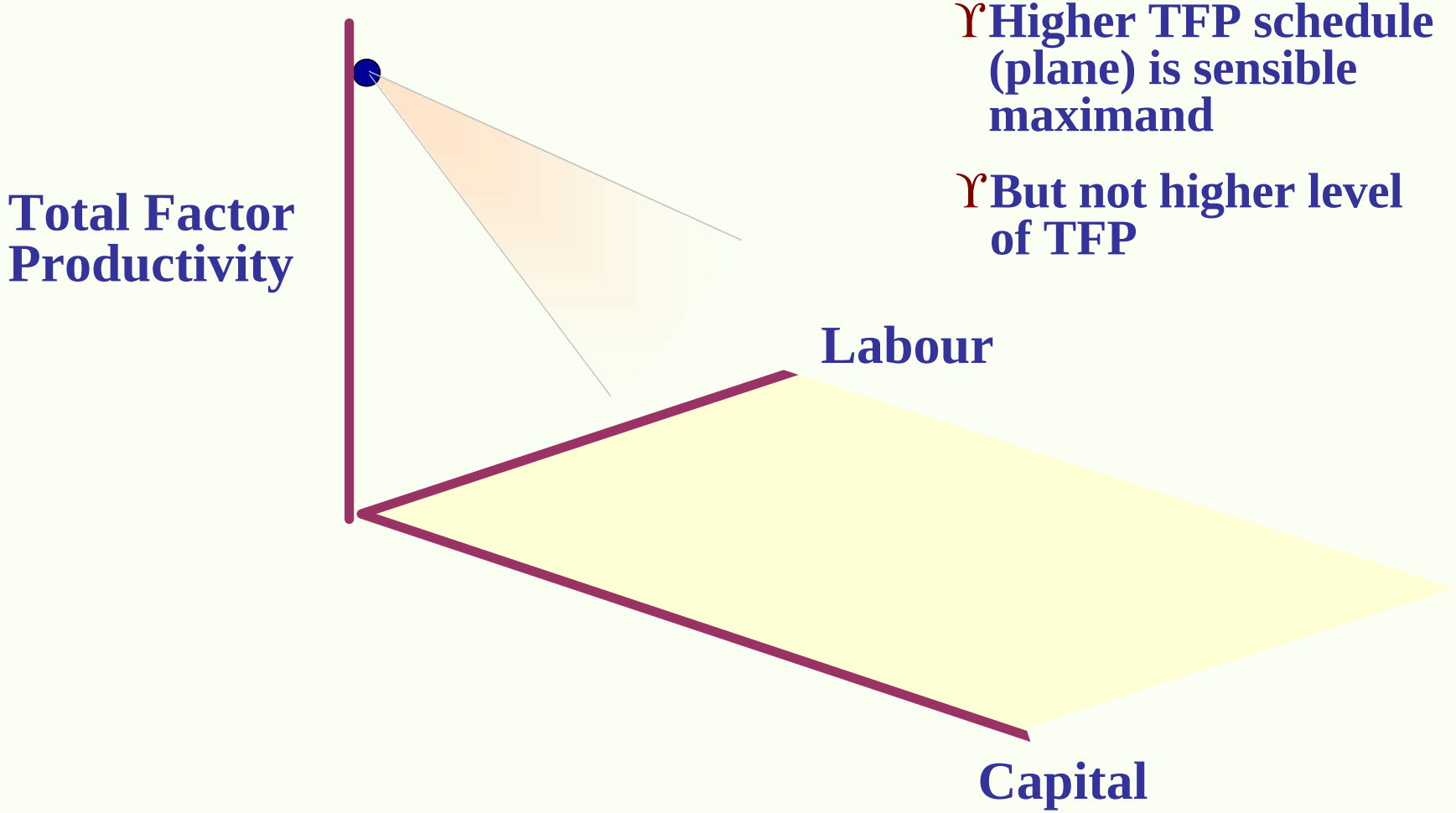


Capital Productivity

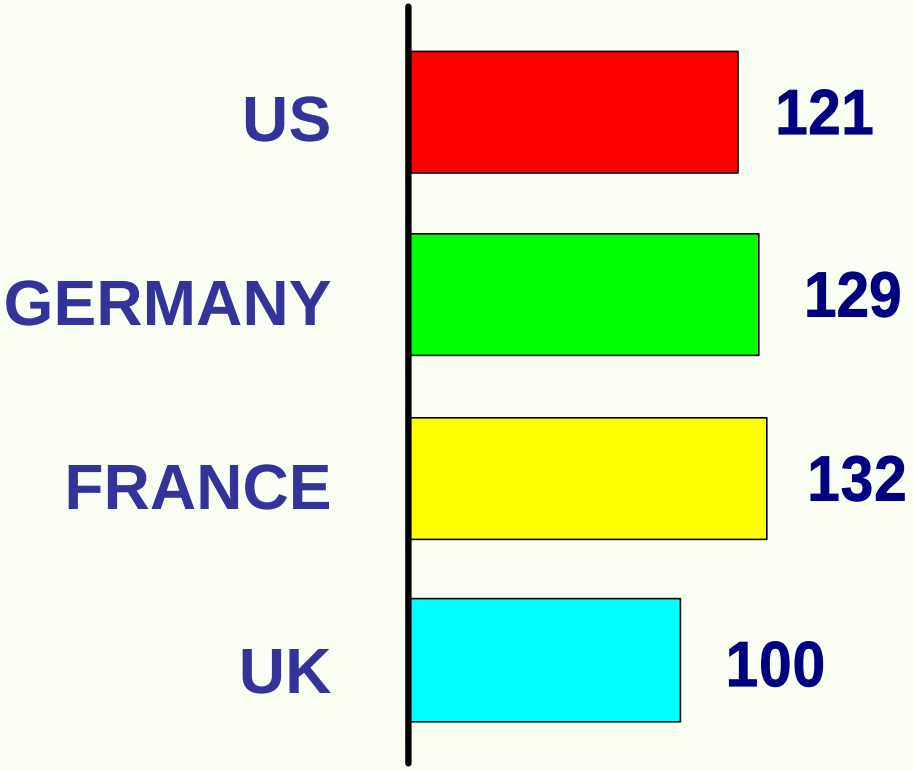


TFP - A Declining Function of Capital & Labour Input

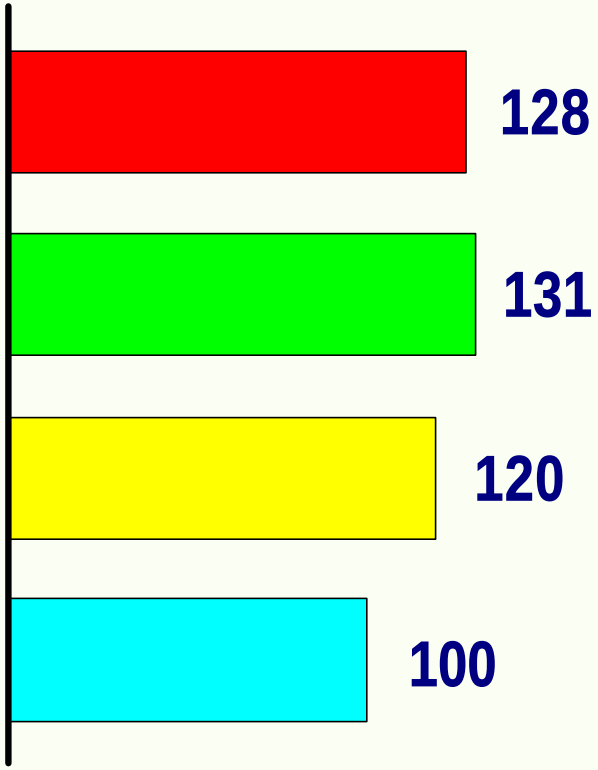
- Higher TFP schedule (plane) is sensible maximand
- But not higher level of TFP



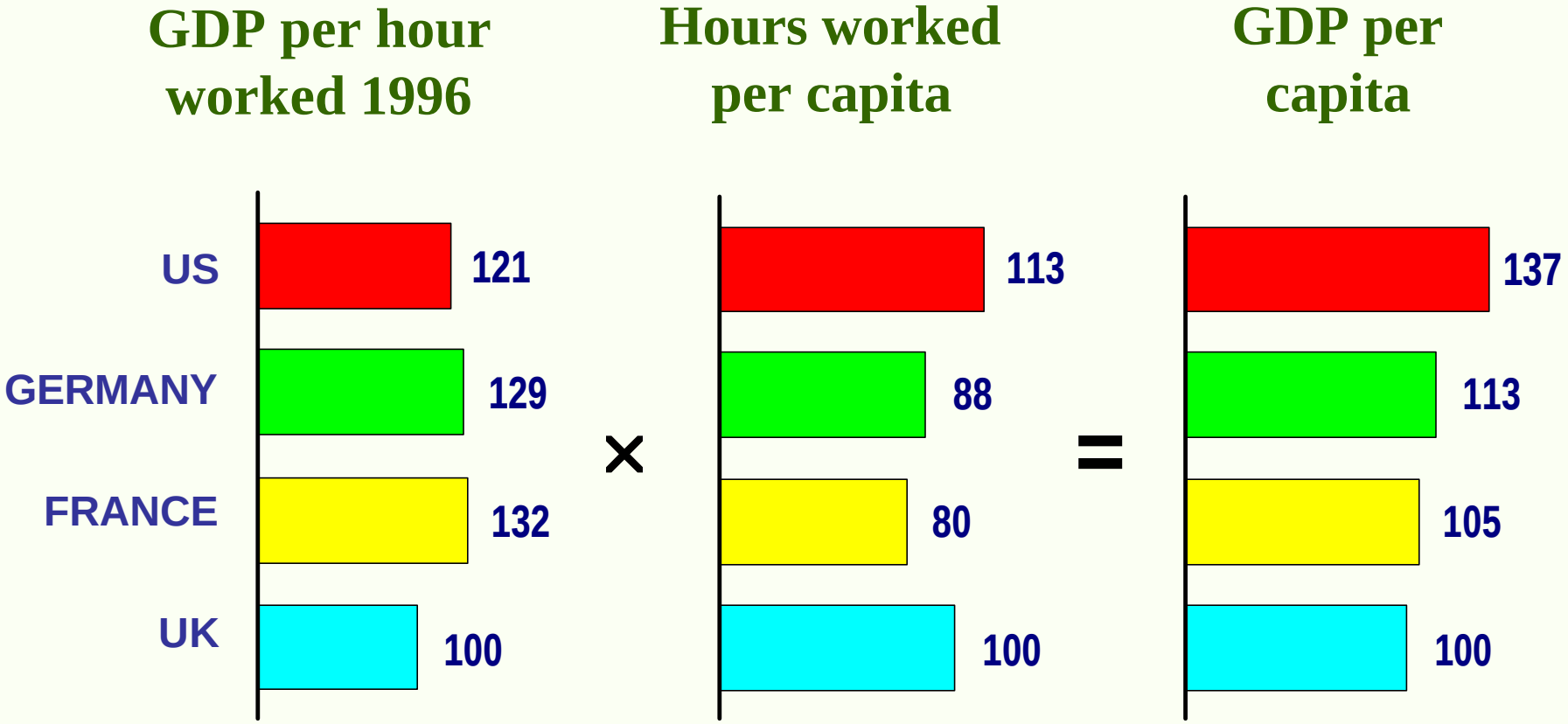
GDP per hour worked 1996



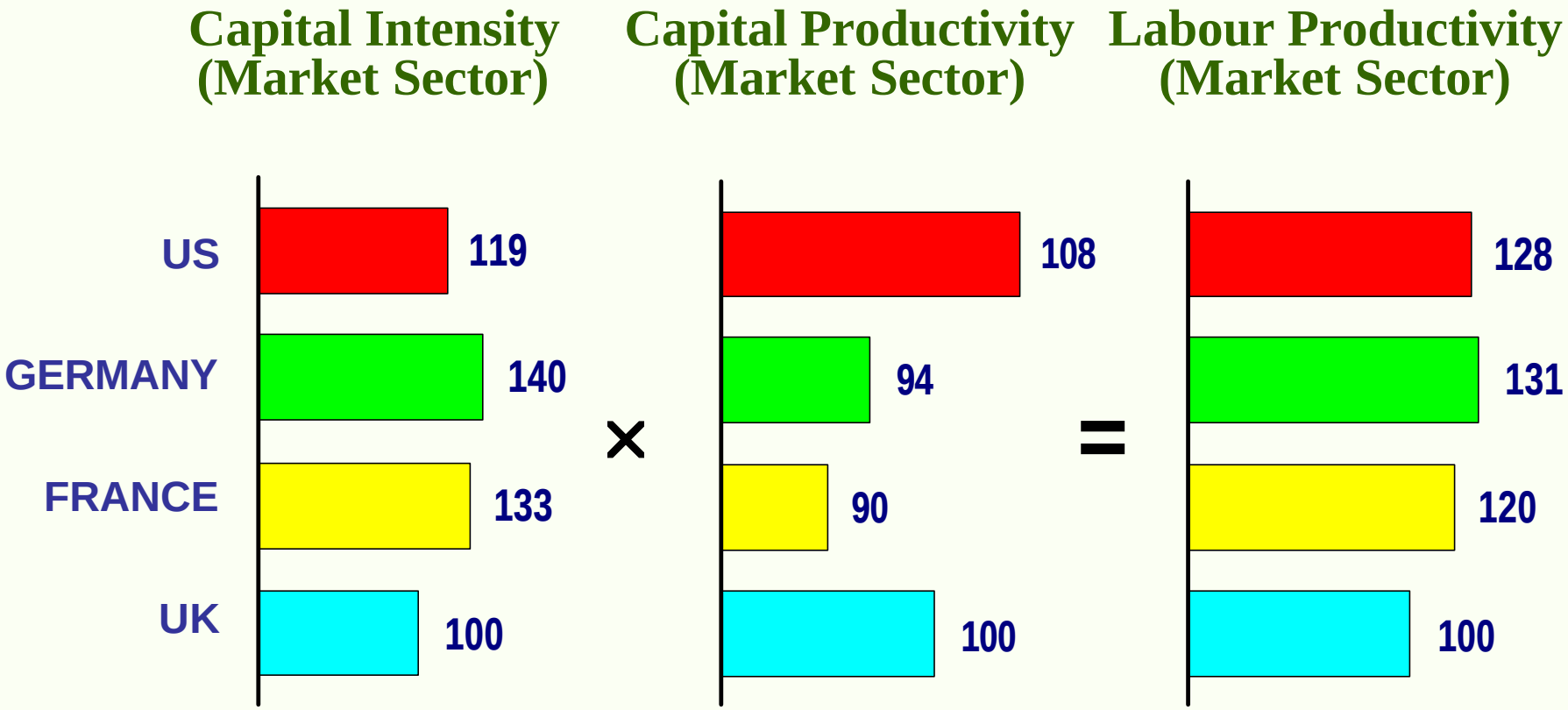
Market output per hour worked 1996



Source: O'Mahony, NIESR

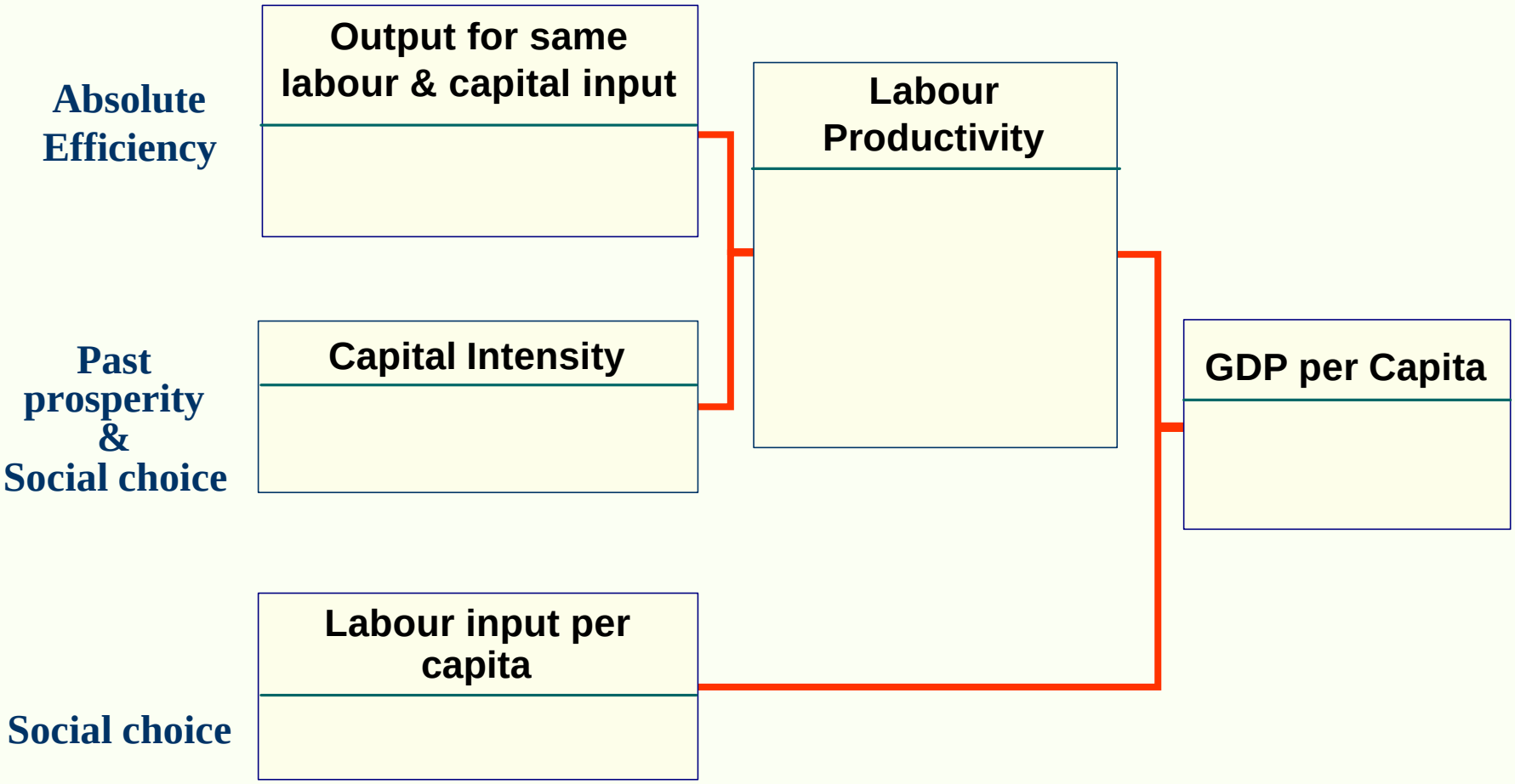


Source: O'Mahony, NIESR

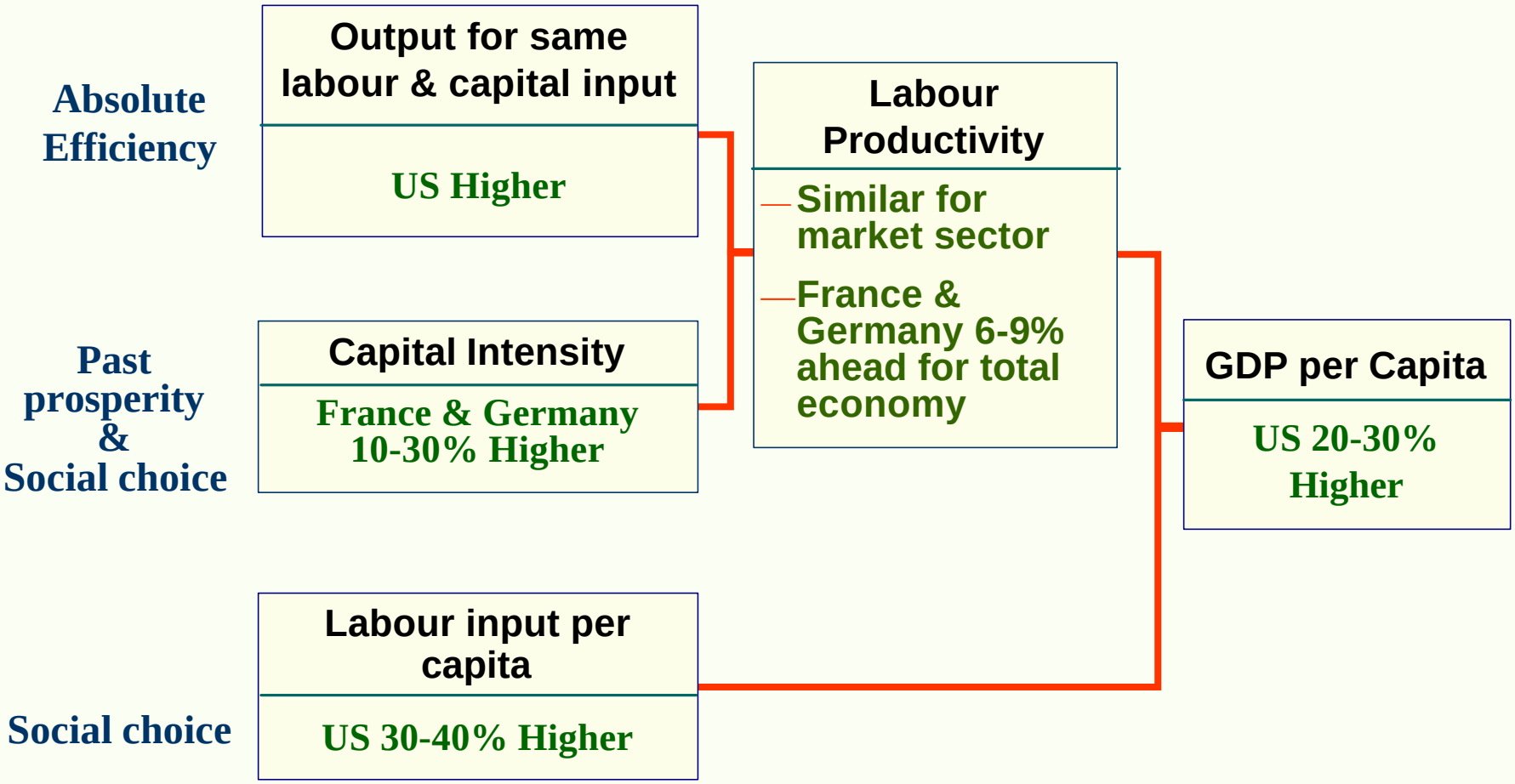


Source: O'Mahony, NIESR

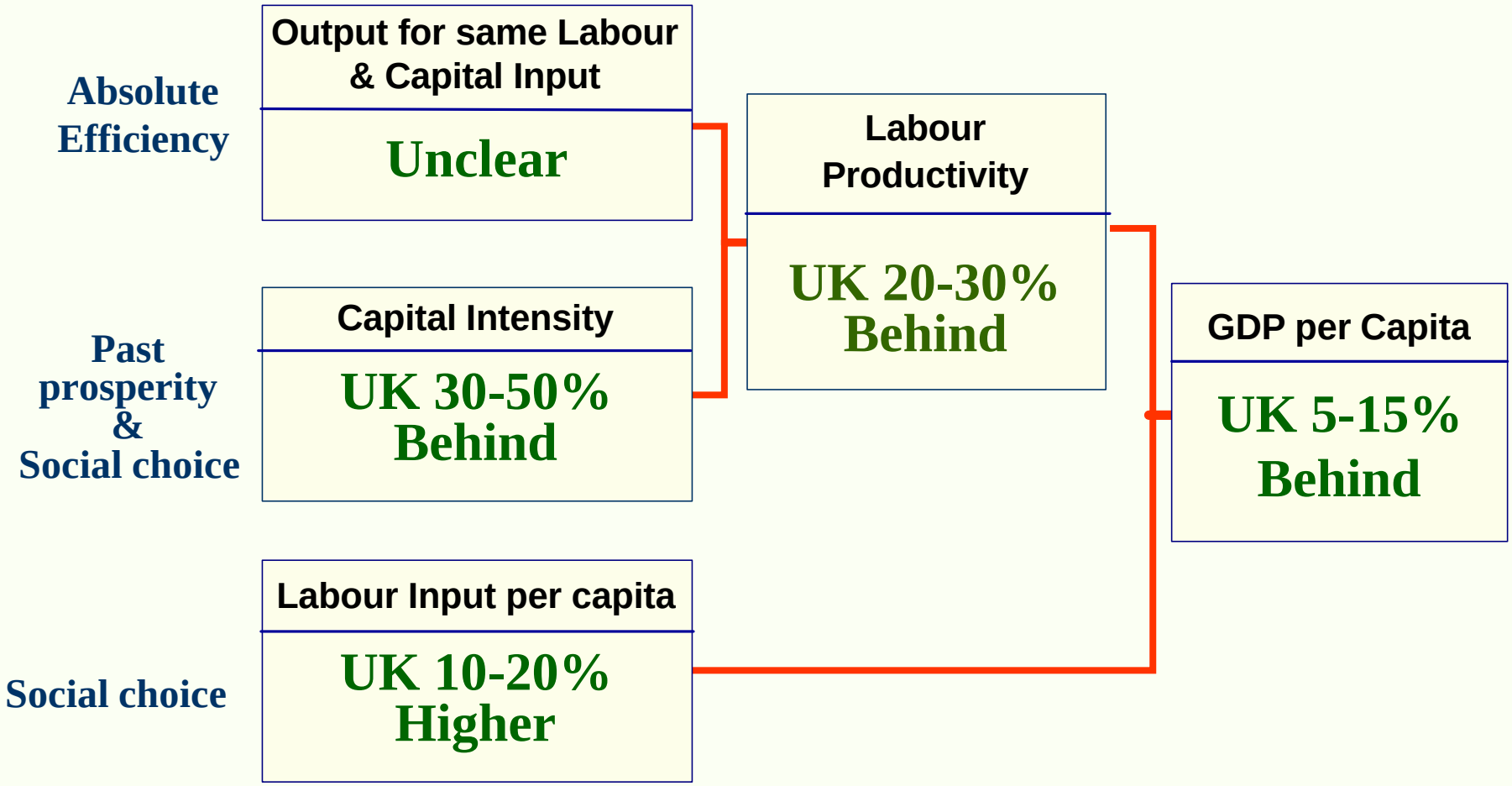
US versus Germany & France



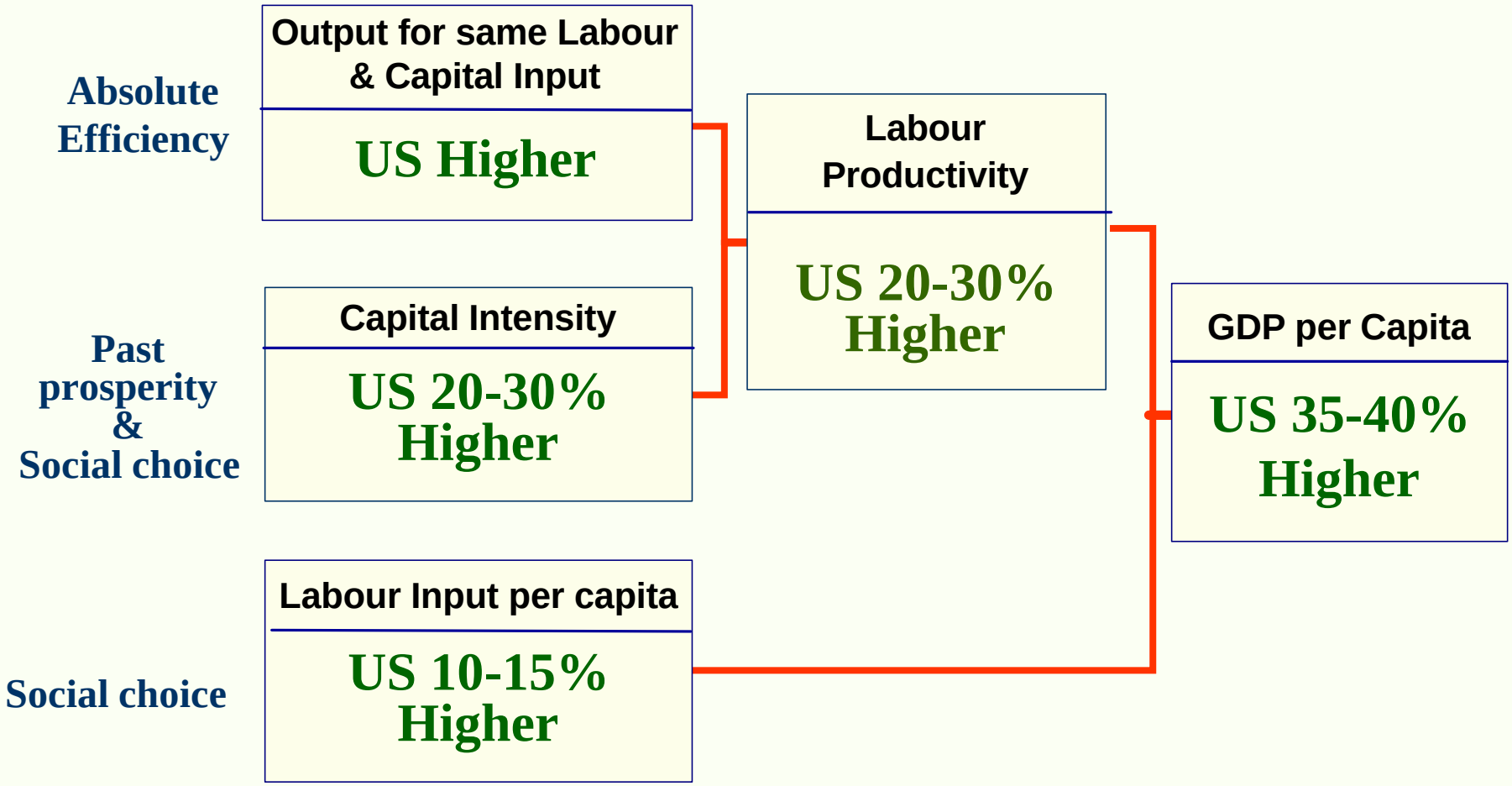
US versus Germany & France



Germany & France versus UK



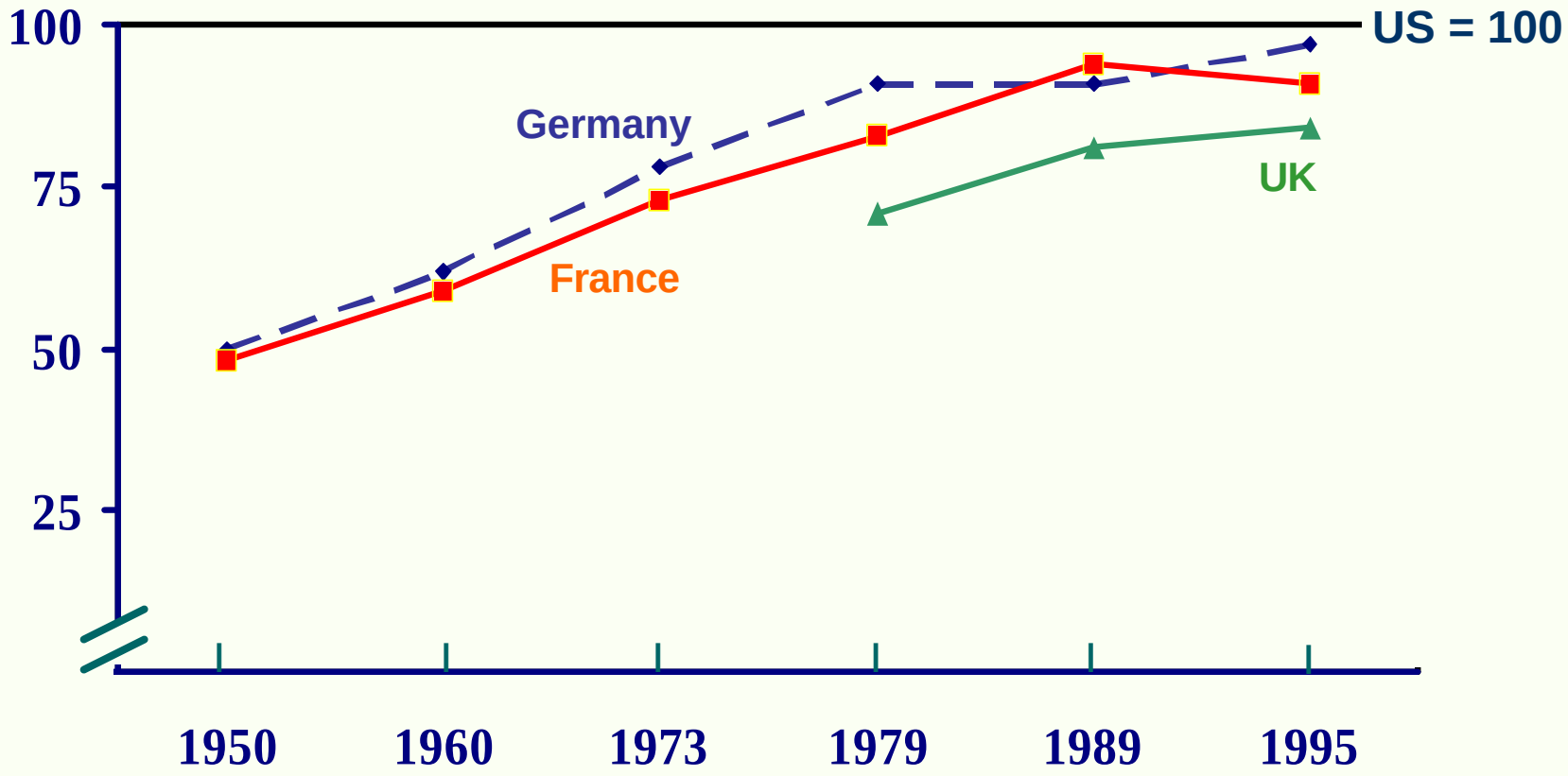
UK versus US


Absolute Efficiency
Output for same Labour & Capital Input
US Higher
Past prosperity & Social choice
Capital Intensity
US 20-30% Higher
Social choice
Labour Input per capita
US 10-15% Higher
Labour Productivity
US 20-30% Higher
GDP per Capita
US 35-40% Higher

Key Questions:

- **Why is the US ahead in absolute efficiency?**
- **Why has Britain made different social choices than France & Germany?**

Total Factor Productivity:Market Sector 1950-1995



Source: O'Mahony, NIESR

Inherent US Advantage - Large Single Market

- One Language
- More homogeneous culture
- More homogeneous legal, accounting & tax systems
- One currency

→ Lower overhead administrative costs

→ Economies of scale in production & marketing

→ Increased competitive intensity/ contestability of markets

Inherent US Advantage - Lower population density

- Lower cost of land
- Less public pressure against green field development

→ Less constrained hotel & retail space

→ Larger manufacturing plants & economies of scale

→ Less congestion costs in physical distribution

→ Ease of development of new clusters

→ Increased competitive intensity / contestability of markets

Responding to the US advantages

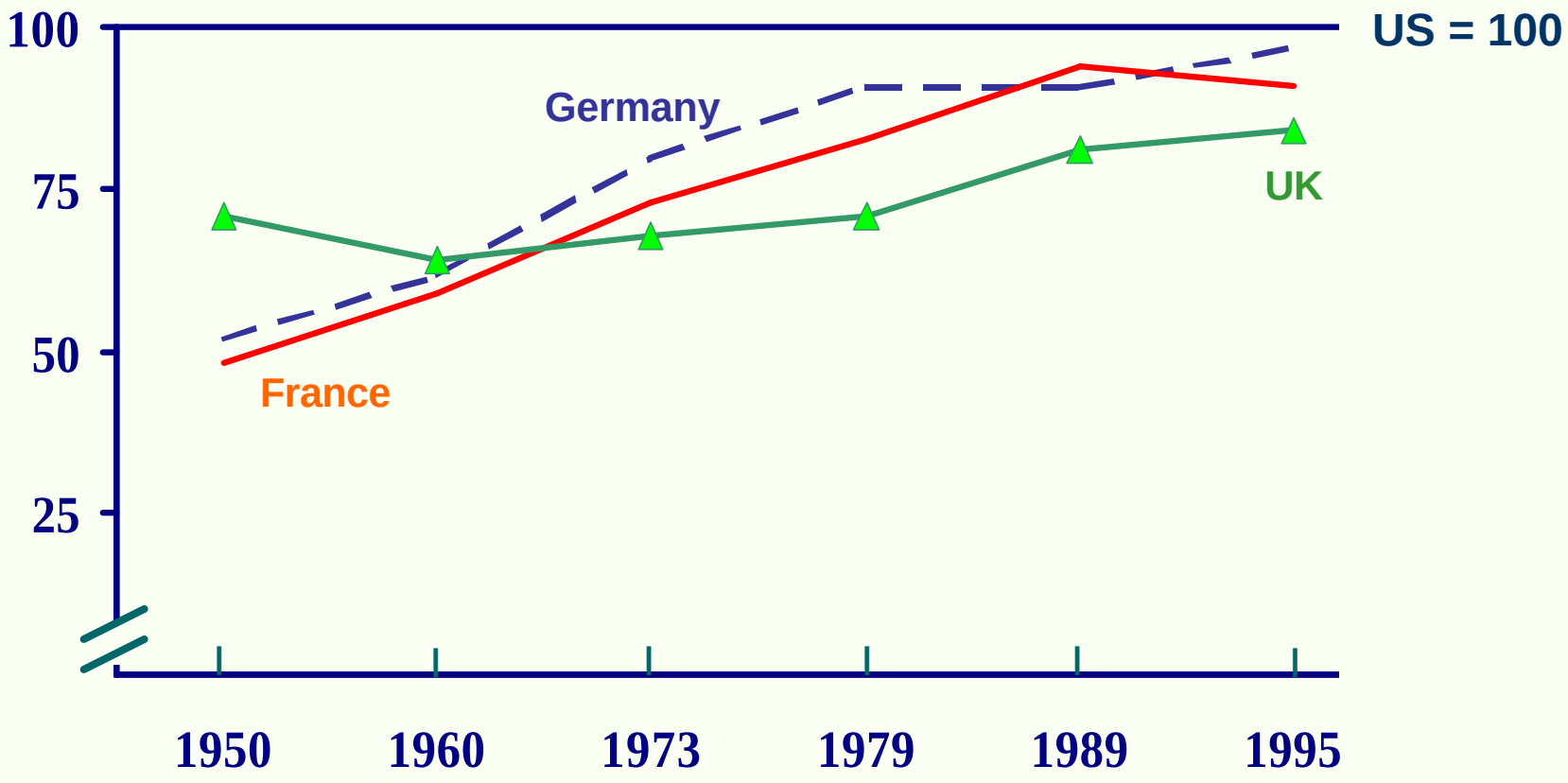
- Large single market
- Ease of development

- Can we match the US?
- Would it be desirable?
- Or should we accept as inherent?

An Inherent US advantage?

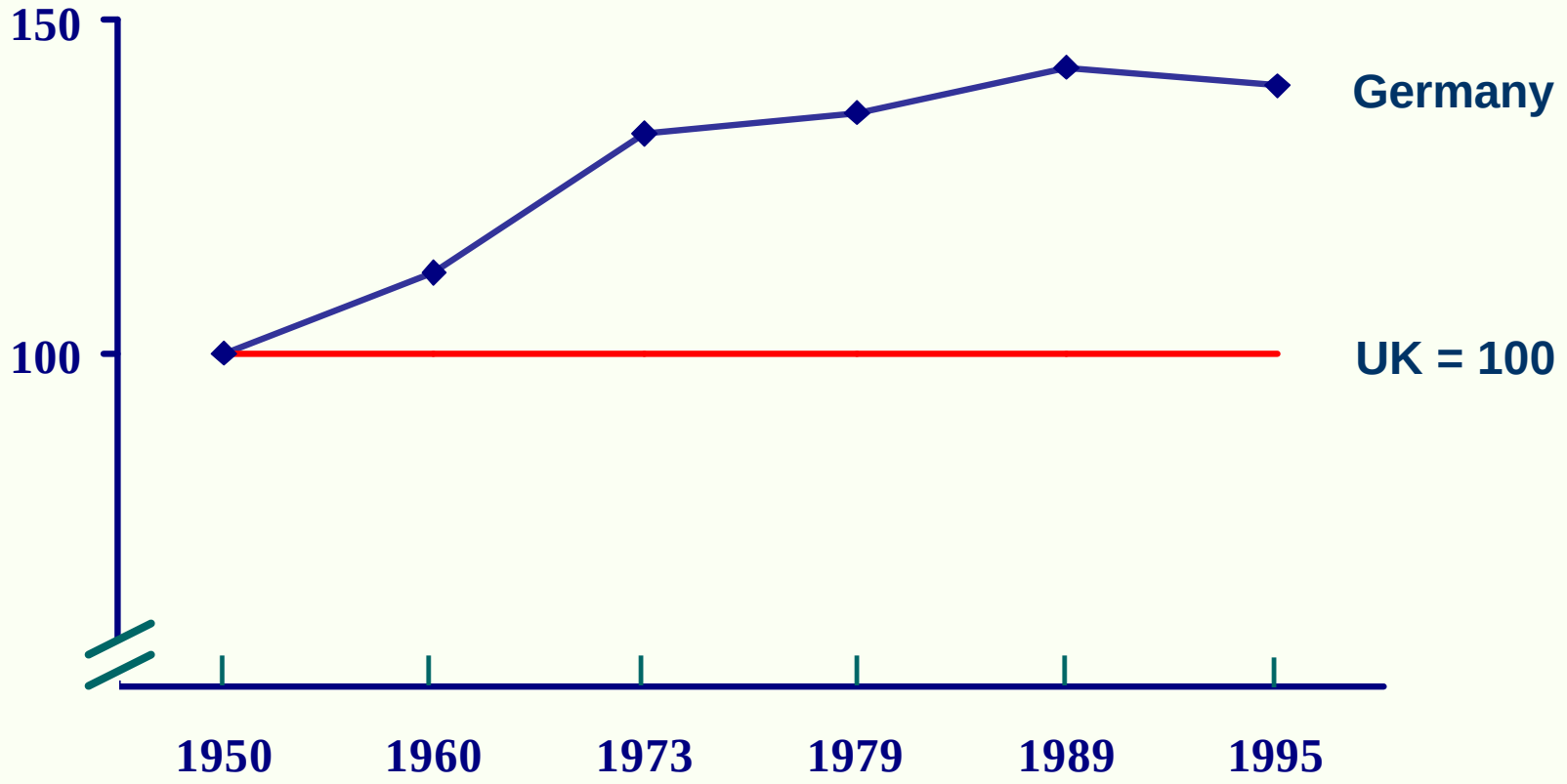
- Not a higher rate of growth
- Not a constraint on further UK catch-up
- Not a constraint on employment creation
- But a permanent advantage of say 5% (?) if all other factors equal?

Total Factor Productivity: Market Sector 1950-1995



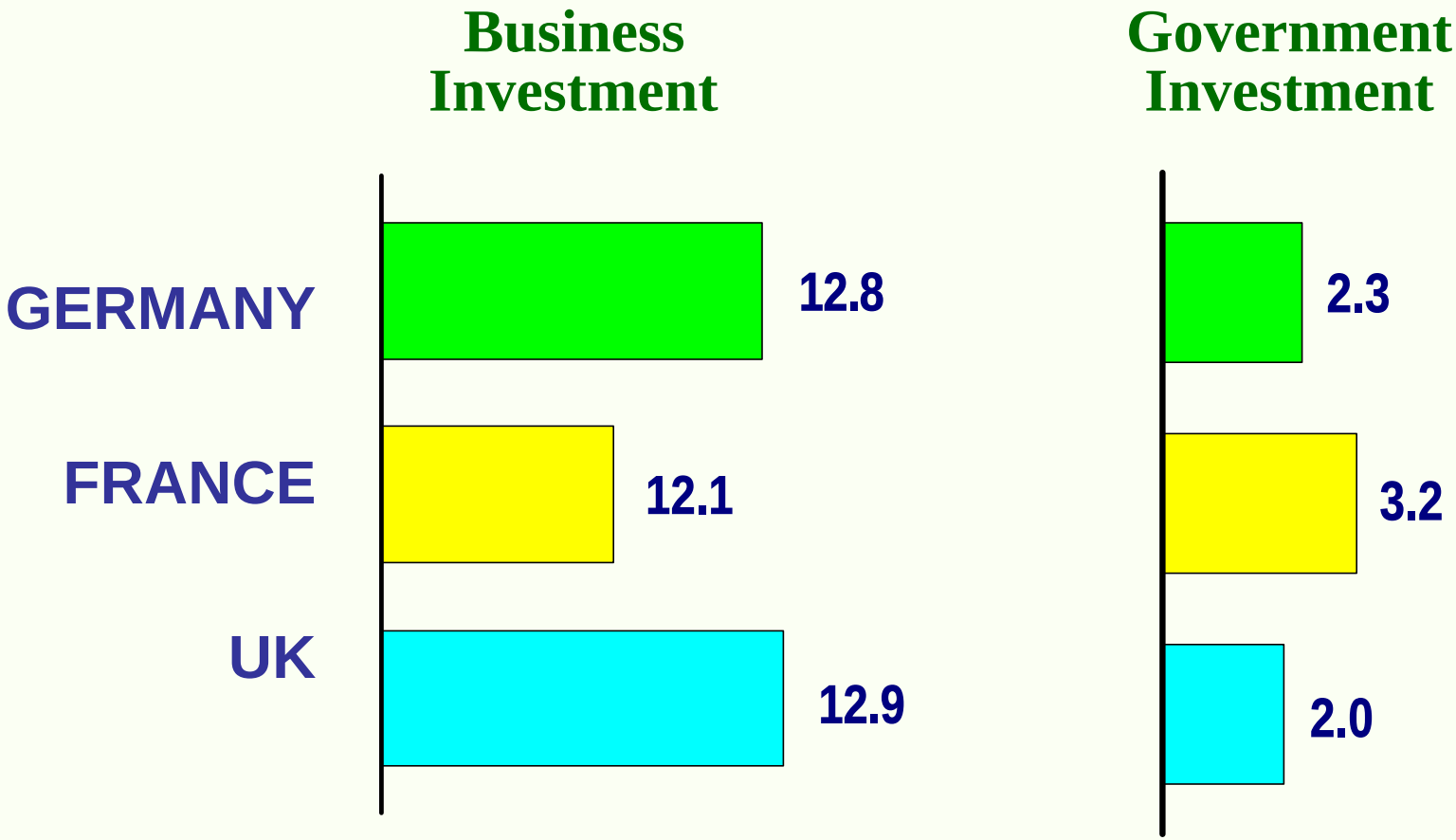
Source: O'Mahony, NIESR

Capital Intensity Market Sector 1950-1995



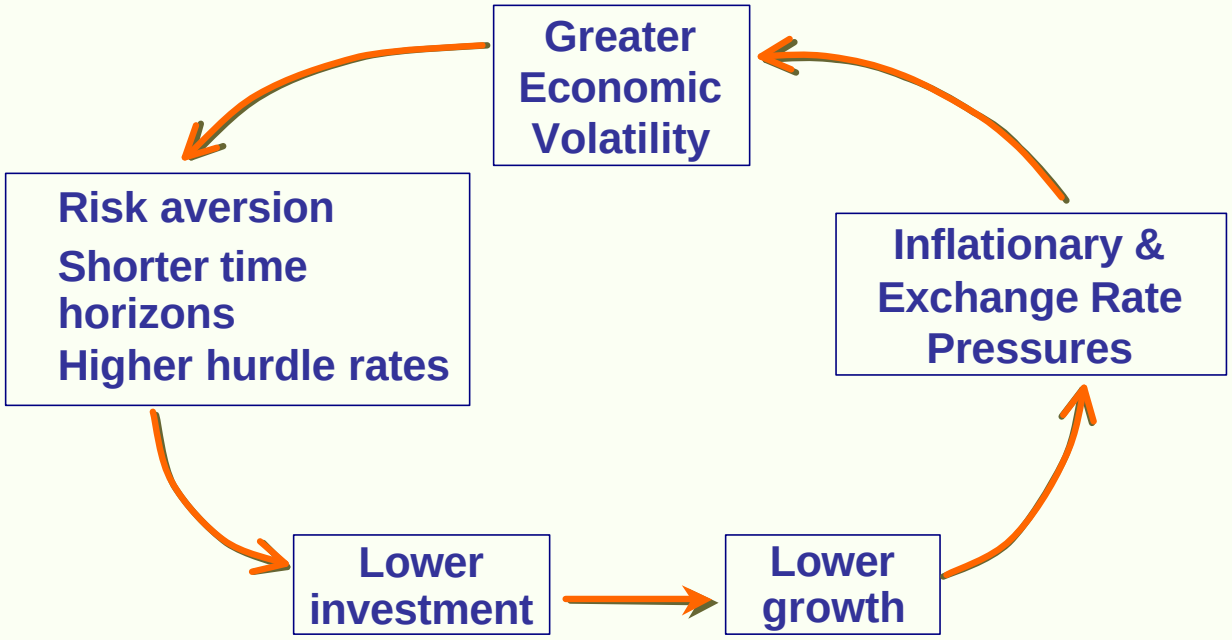
Source: O'Mahony, NIESR

Investment as % of GDP 1987-1998

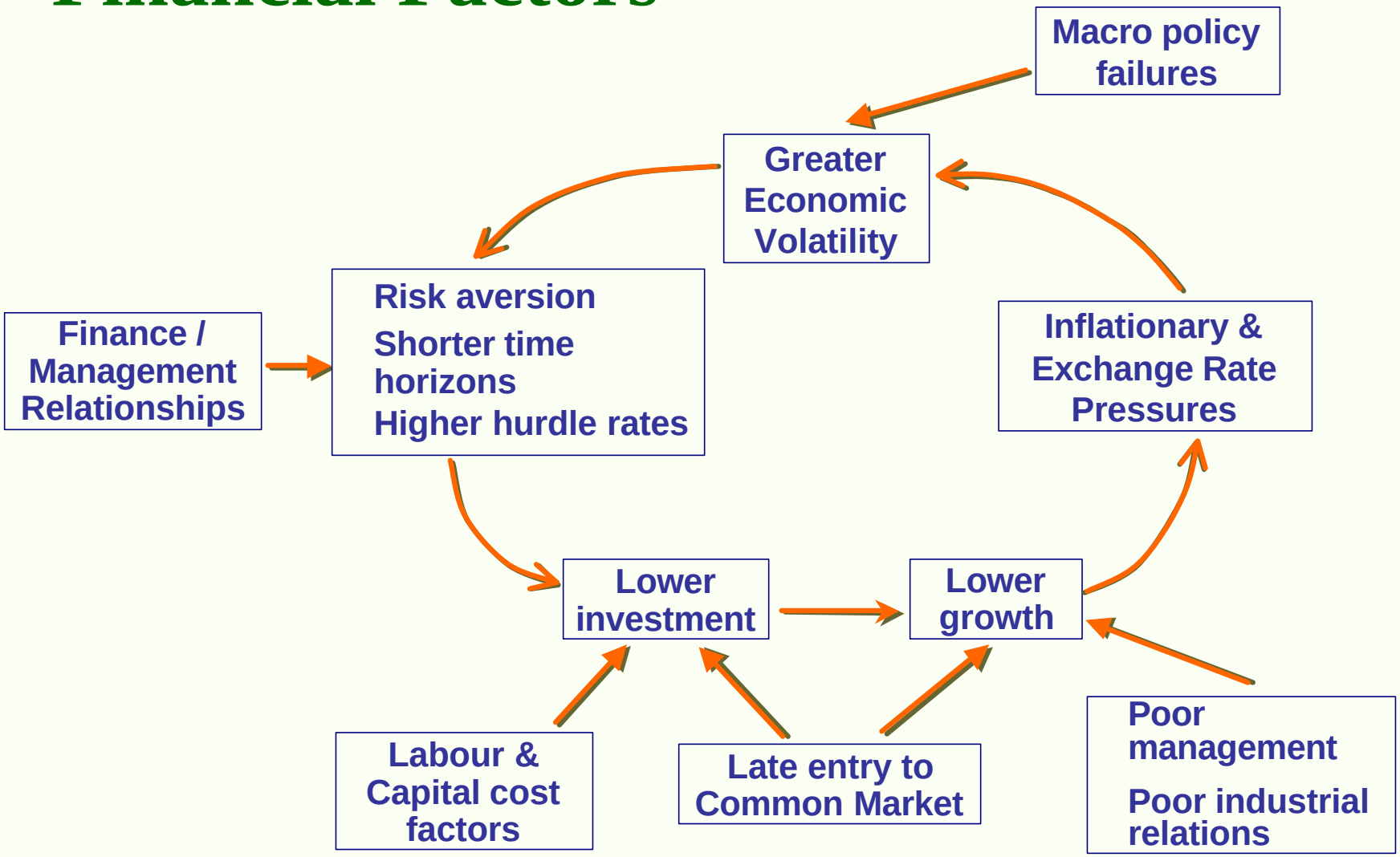


Source: OECD

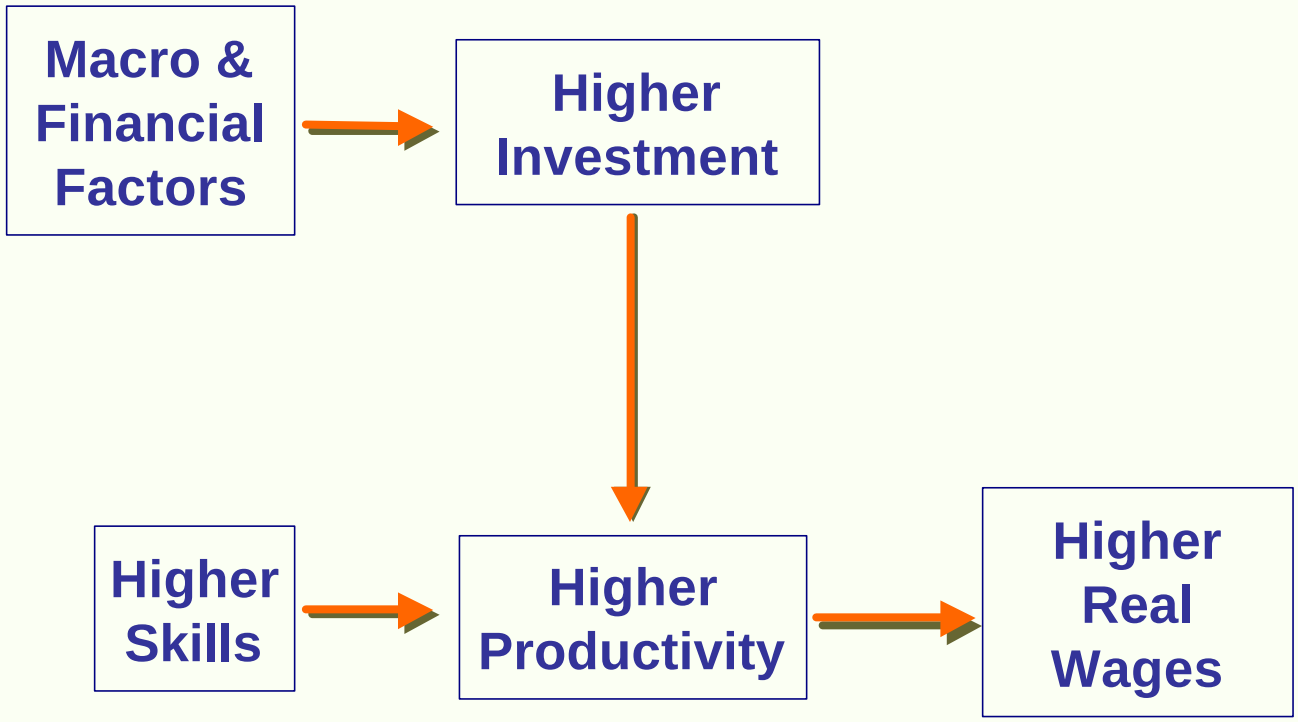
Lower UK Investment - Macro and Financial Factors



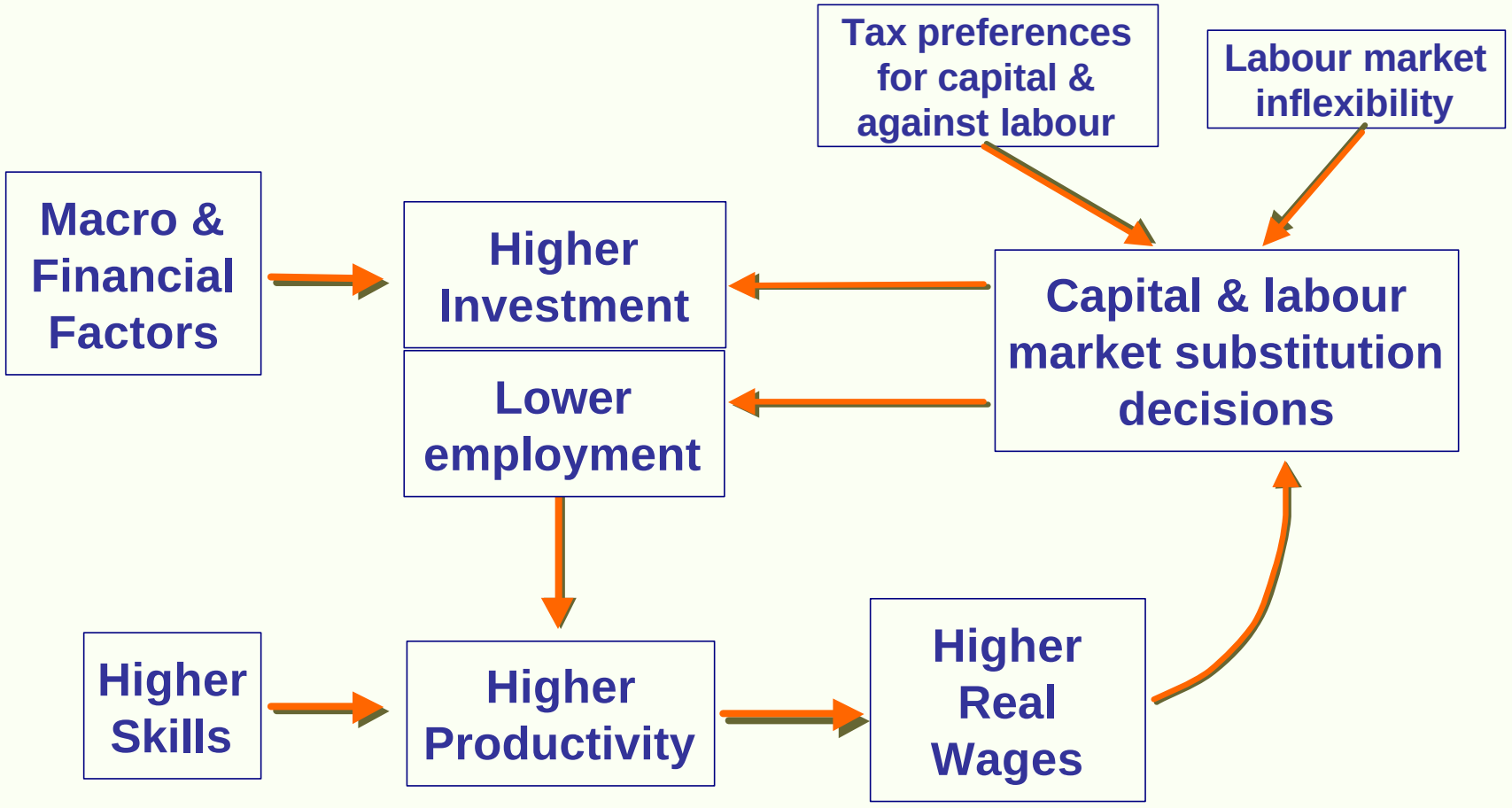
Lower UK Investment - Macro and Financial Factors



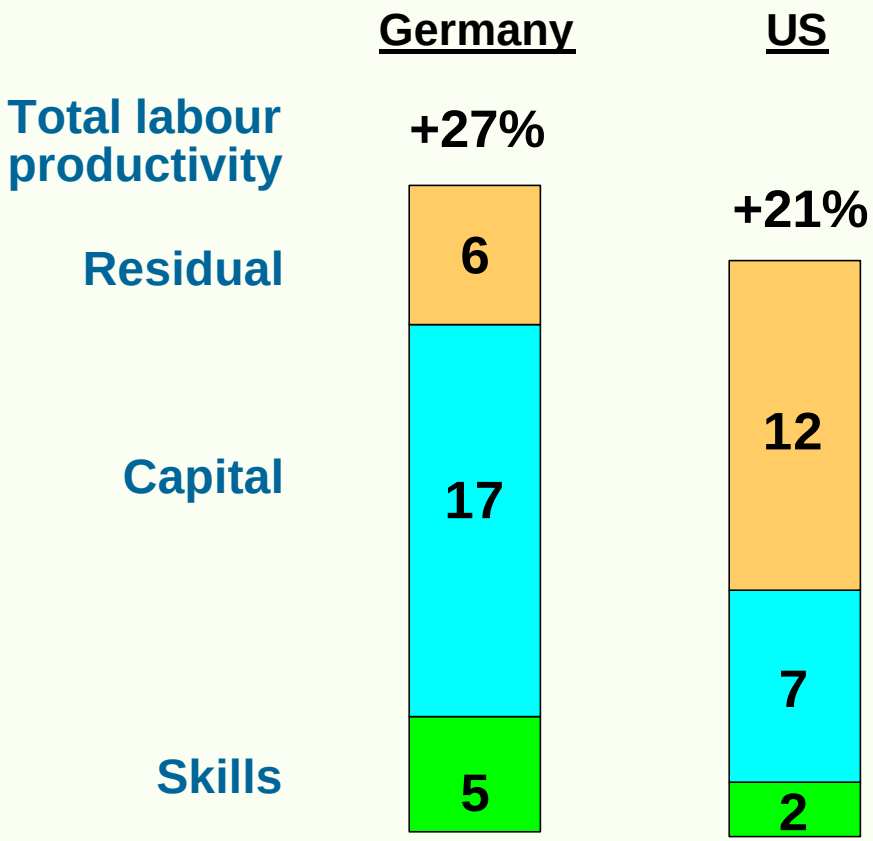
Higher Continental Investment - Labour & Capital Factors



Higher Continental Investment - Labour & Capital Factors

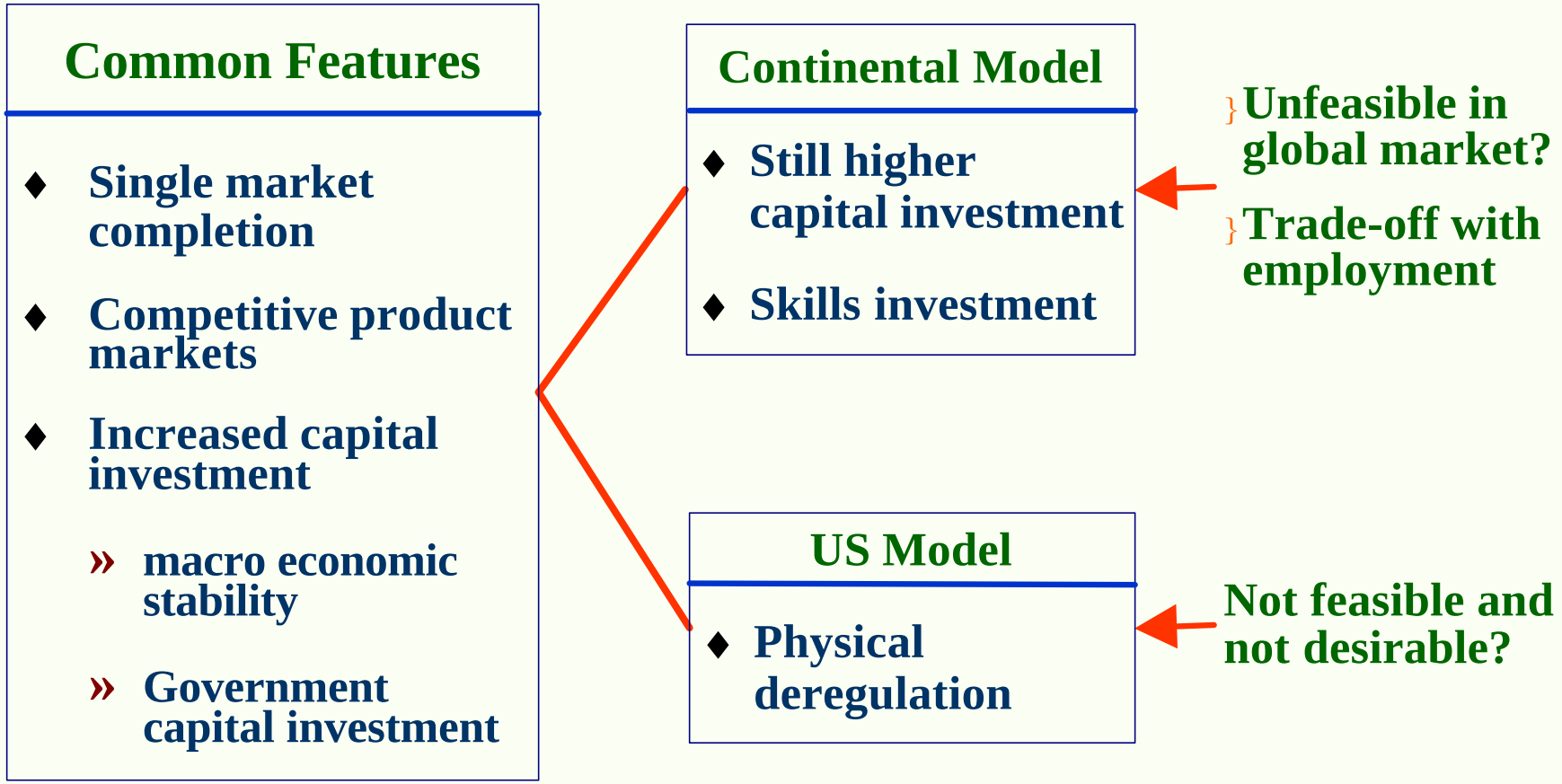


Sources of labour productivity advantage over UK - 1995



Source: O'Mahony, NIESR

Choices in productivity improvement



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