Week 1 Transcript

That's true.
Is that true?
I suppose so, I think so.
Okay.
Good afternoon everybody.
We're going to get started.
Hello.
It is five after according to my iPhone.
So that's when we're going to start.
And thank you all for coming.
It's probably the most Elsie of you all term, but
hopefully it's not the case.
Welcome to EQ one B.
Uh, this is a term on macroeconomics.
Uh, following your microeconomics, uh, term, we're going to shift
our focus and attention to the aggregate economy.
That's what the study of macroeconomics is about.
Now, when we read the newspapers and, you know, we
things hear things about the news, it's usually about how
the economy is doing.
The economy in a country, sometimes the economy in the
world, sometimes an economy, uh, in a region, uh, we
tend to hear about what happens on the aggregate.
And that's what we mean by macroeconomics, the study of
aggregate economic, uh, variables.
So, for instance, a country's GDP and this is we're
going to, you know, talk about GDP, uh, in the
first lecture as a foundation, as a basis is a
measure of economic activity.
I'm sure all of you are well aware of that,
but I think not all of you would understand exactly
what's behind, uh, measuring economic activity and what counts as
economic activity or productive economic activity.
Of course, um, macroeconomics over the term, we're going to
study things that, you know, you're mostly familiar with or
at least hear about things like GDP, things like growth,
things like employment, things like unemployment and inflation.
Um, there are more seats up top, by the way.
Uh, and we're going to study how these, these variables
relate to each other.
Okay.
There are some underlying forces that cause a relationship between
inflation and employment, uh, business cycles, you know, GDP over
the short run, over the long run.
And my hope is that by understanding these concepts and
the underlying economic mechanisms behind that, you're going to have
a deeper understanding of the things that you will read
and, of course, encounter in the workforce, including reading the
Financial Times or the economists understand what's behind these numbers
and these concepts.
Now, obviously, we care about GDP, right?
During the pandemic, over the course of pandemic, this country,
the UK, saw the biggest recession, the biggest and deepest
recession in 300 years.
Obviously, politicians care about GDP, right?
If you get a good GDP number, you might well
be elected or re-elected as president or prime minister.
Um, in some countries like China, uh, you know, when
you are a provincial head and you have a good
GDP record, then you get promoted to the higher run
in the political ladder because GDP also captures, um, not
only just aggregate economic activity, but it also means that
there's going to be more taxes collected for the government.

So they have a bigger pot of money to spend.
That means there's going to be more employment.
That means that you're going to earn more.
And that means that generally, uh, you know, your livelihoods
are probably going to, uh, increase because of, uh, GDP.
Um.
You know, things that we care about.
Europe is now a hit by high inflation.
That's going to affect policy.
That's going to lead to high interest rates by the
government.
Uh, during, uh, the the global financial crisis.
The ECB, the European Central Bank poured in billions and
billions, hundreds of billions to support the economy.
Right.
So what can governments actually do to raise the living
standards for the country or reduce GDP?
Volatility is all going to be part of what we're
going to study, uh, in this term.
So let's start with GDP booms and bust cycles.
Okay.
So, um, GDP is, um, a measure of how much
a nation produces.
Okay.
These are already concepts that are familiar.
I expect economic growth is the annual growth rate of
a country's total economic output.
Usually it's measured by GDP, GDP growth.
We're going to talk in next lecture about the difference
between nominal and real GDP.
You know sometimes you just get a very big nominal
GDP because prices have all gone up.
Say that inflation is very high this year.
But you produce actually the same number of goods, then
you have a higher nominal GDP.
But it doesn't mean that the economy is actually expanding
in real terms.
Well, no.
So nominal GDP is going to be distinguished from real
GDP.
And we're going to tell you exactly how that's done.
Right.
Economic growth.
So when we read a numbers like you know now
just read the news, uh, GDP growth in the world
in 2024 is expected to be 2.5% that year.
Right.
Well that tends to refer to real GDP growth okay.
That's not that's the thing that, um, countries really care
about, especially now with high inflation.
If you really just look at nominal GDP growth, you
don't know actually what's if there's a real increase in,
um, in, in, in output.
Um, look, you know, economic growth matters.
Huge deal.
Right?
Uh, it, um, uh, if we look across countries in
the world and we're going to talk about, uh, income
inequality, what drives income over the long run, obviously, growth
is a concept that compounds over year if you grow
by 1% per year, compared to if you grow by
3% per year, that can amount to huge differences over
time over a few decades.
Right?
This is why economic growth, real economic growth is something
that we really care about.

Uh, inflation is the annual percentage increase in the total cost of living.
We'll talk about that common basket of goods that you use to measure, um, you know, your daily livelihoods and how that price of that basket has increased or changed over time is a measure of inflation and employment.
Of course, we're going to talk about, uh, the precise definition is the fraction of the labour force or the actual people who can work that is unemployed.
Now, let's start with a GDP.
Today we're going to focus a lot on talking about measurement, a lot about accounting.
Now, that might seem to you as somewhat potentially boring, but I don't want you to think about it that way because clarifying some of these concepts is really important.
Okay.
The accounting aspect of it is going to be very important for you to understand what constitutes GDP.
And we're going to try to apply some of the things that we learned this lecture to real world issues, like what actually gets counted as GDP.
You know, how does the hottest thing that we're talking about today like I going to affect GDP?
I want you to be able to use your own thinking and logic and understanding to be able to think about these issues.
There are no definite answers necessarily for a lot of these real world issues.
But the point here is not to teach you a little bit of math and the concepts, but for you to use that framework to think about real world issues in your, uh, using your own, um, uh, um, frame of thinking.
Um, so GDP is the value of goods and services produced within a country's borders over a particular period of time.
Now I'm going to emphasise two things here, okay.
The first is produced within a country's borders okay.
In this country.
Now even if I look across in this classroom, lots of you are coming not just from this country, but from all over the world.
And if you decide to work in the UK after you graduate, then you are contributing to UK's GDP.
But it's going to be very different when many of you are citizens from other countries, that there will be another concept that will count you.
Okay, whether you're from Korea or Japan or America, you're going to be counted as an American citizen, contributing to the US economy not within its borders, but as a resident.
Now, those are going to be very different concepts.
So here the emphasis is on within a country's borders.
And the second thing I want to emphasise, because it causes a lot of confusion, is it happens over a particular period of time.
Okay.
It's over a year, usually annual GDP or over a month a quarter.
Quarterly GDP is over a quarter.
So it has to be something that's measured within a period of time.
Now that leads to the third concept, which I want to emphasise here is the difference between what we call a stock variable and a flow variable.
Again, I've seen students in the past get confusion, confusions

about because these are two different concepts.
Now let me tell you what a stock variable is.
The stuff that is accumulated over time.
For instance, um, your, uh, let's say your parent's wealth
at this point in time is a stock variable.
Well, it's been accumulated over many, many years of working,
right?
But the income they earn over a year is a
flow variable.
It's measured over a period of time.
Same thing as, let's say, um, debt.
Okay.
A nation's debt is accumulation of borrowing every year.
And today you have, let's say I don't know how
much debt this country owns is a stock variable.
Okay.
Similarly, if you look at a corporation capital stock, capital
stock by its name is a stock variable.
But the investment that goes in every year to add
to that capital stock is a flow variable.
Okay.
So what's added over a period of time.
That sum is a stock variable.
So these are two uh different concepts.
And sometimes it's important for you to remind yourself, do
you know whether this is a stock variable or a
flow variable.
And GDP here is a flow variable because it measures
economic activity over a period of time.
Now GDP can be separated into a trend in business
cycle component.
So let's just take a look at the United States
since we're using the textbook of US economists.
And fortunately we're going to use a lot of US
examples.
But the same concept applies to pretty much every other
economy we're talking about.
So let's just look at U.S. GDP, okay.
And here we're talking about real US GDP, a concept
we're going to refine a lot more uh, in the
in the next lecture.
But basically just look at 2009, okay.
2009 the US real GDP has reached $16 trillion.
Okay.
Now 1929 it's 1 trillion USD.
But the reason how we count it as real GDP
is to use prices of one base year.
Again, this is a concept that I don't need you
to grasp right now.
We'll talk about it later in the next lecture, next
lecture.
But this graph uses prices from 2009, but quantities used
in 1929 or 1930 and so on.
Right.
So that's a concept, real GDP because it's taking prices
from one base year.
Now as you can see.
First of all what do we see.
The US real GDP rose 16 times okay between 20
1929 and 2009.
So uh, over um, uh, you know, this 80 years.
And the second thing we see is that, well, first
of all, this is the trend.
Okay, if you do trend these series, you can deduce
an average growth rate, okay, a growth rate over time
a growth rates differ.

The third thing is that there are fluctuations around that
trend right.
It's not just following one trend right.
Going smoothly.
And so if you if you do trend this and
you take away this trend and this is what we
call the cyclical component okay.
So here is the red line is the trend long
run growth rates right.
These long run growth rates on the US tends to
be 3 to 4% on average.
Of course it was faster when it was a less
rich country.
We're going to talk about why that is.
But we want to separate the longer term structural trends
from the cyclical components.
And this is a cyclical component.
We often call this, you know, business cycles.
A lot of what you're going to hear or read
in the newspapers a lot is a lot about business
cycles, including, oh, there's a stimulus here and there is
a fiscal policy there.
It's to reduce these business cycles and fluctuations.
So you can see that around the trend.
Um, there are recessions okay.
So, you know, subsequent, um, consecutive periods of negative growth
rates and booms.
So these are boom bust cycles around the trend.
Now, the reason that we separate trend and the cycle
is that there are going to be different determinant factors
that drives both things that make the US a very
rich country because the long term growth are things like
productivity, things like human capital, things like, you know, technology
and all these things.
We're going to get to that.
But in the short term, there could be fluctuations.
And that's often what we talk about.
Oh, the government needs to have an expansionary monetary policy
or fiscal policy to reduce that boom bust cycle.
So this is why we need to separate the two
because there are different driving forces behind them.
I'm going to study, um, what's what's what's driving the
two.
Um, so what was this?
1920s bit of history.
Yes, the Great Depression, excellent in the US, but also
in other countries and even in this part of the
world.
And um, uh, obviously, you know, followed by booms, but
there have been, you know, quite a few boom and
bust cycles.
And of course, after 2009, there was a very deep
recession as well.
Um, by some accounts, uh, we're going to see what
happened during Covid.
Um, in fact, this is what happened during Covid.
If you can look at us and this is, again,
us real GDP, uh, based on the base year of
2019.
Okay, so 2019, if that were started, if we.
We start with 109 2019.
This is what the US GDP would have been potentially,
with the same growth rate that it had experienced between
2016 2019.
So 2.5% average real growth rate.
This is what the economy would have looked like.

This is what the economy actually looked like okay, a
big deep recession.
But two things why it's important to to separate the
trend in the growth.
So now let's d trend this and look at this
cyclical component okay.
So first of all we see.
So this is just taking the trend away that um
GDP in the second quarter of 2020 uh declined almost
by ten percentage points.
Right.
But then it was followed by with a quick rebound
after opening up.
So if we go back to the what this picture
however, doesn't tell you is whether it has converged back
to the potential level of output.
Right.
So if this grade line was the potential output, we
would have seen, we can see from only this graph
that it did fall sharply, but it's actually pretty much
converged to potential growth at least by 2022 and then
fallen somewhat in the recent years.
But not because maybe not because of the pandemic, but
because of other things like inflation and things like that.
So this is a levels graph.
Another thing that you want to distinguish when you look
at graphs is are we talking about levels or growth
rates.
Right.
Levels and growth rates tell you different thing.
Obviously you can infer one from another, but they do
tell you different picture.
For instance, as I mentioned, this one shows you that
you're converging back to the potential output, whereas this just
tells you that you basically dropped by a lot 10%,
and then you grew by a lot afterwards.
Okay.
So this is what happened during the pandemic.
I guess what we're trying to get a sense is
that, you know, GDP is obviously one of the most
watched numbers.
Uh, and uh, um, and this is the importance of
distinguishing between trend versus the cycle.
Okay.
So now how do we measure GDP.
What is GDP.
So GDP obviously at the very high level is a
measure of aggregate economic activity as we mentioned.
Right.
But what does that mean.
And how do you and how do you actually measure
it.
Well first of all there's one key idea.
One key concept is that there are three ways of
measuring GDP.
And they should all be equivalent.
Okay.
So production is how much that's actually produced.
The goods and services that's actually produced again within a
country's borders.
And over a period of time, let's say for a
year, okay.
How much goods is actually produced over this year.
Expenditures.
How much do we spend on it?
Okay.

We're going to be more careful about these concepts.
But first of all, how much we produced should equal
how much we have spent.
Okay.
And that should equal to how much people were paid
in general.
So that's the income approach.
And that's why GDP tells us a lot about the
economic activity of a country, because it tells us that
if this country produced a lot of stuff, then we
actually got paid a lot.
Right?
Because the income income should also be very high.
So GDP in times of booms, in times of expansions,
people also got richer.
Okay.
We also spent more.
That's the three basic ideas that link them together.
And they should all be the same.
But as you will see, there are lots of tricky
points about here.
And as you go through the quizzes and the problem
sets, you're going to encounter some of that.
And hopefully we can discuss some of that over lecture
but also in class.
So these are very basic concepts and very easy to
understand.
But the devil is definitely in the details.
So why do we have this idea that these things
are the same because of this circular flow diagram?
Okay, so let's imagine that we have a very simple.
Simple economy, but in truth, you know, the entire economy
can be kind of reduced to a few players.
Okay, let's think about the players in the economy.
First of all, there are the households or the consumers,
right?
That's all of us.
Uh, the second is there are the firms or the
corporations.
Okay.
The third is, of course, there has to be a
government.
And, um, if we were to eventually introduce this in
this economy, there will also be a financial system.
Somehow the financial system will link all of us together
in ways that will be more specific.
But let's just forget about the financial system for now.
And let's think about these three players now.
Uh, firms obviously, um, uh, employ workers.
Right.
So workers is part of the households or the consumers.
Okay.
Uh, households also buy stuff from firms.
So that's this line here.
Uh, expenditures on goods and services.
Um, it, as we mentioned, provides a factor of production.
We just talked about labour, but in fact, there's something
else that firms that households provide to companies.
What is that?
That is our saving, okay?
Our saving, which we put in, let's say the stock
market.
What does that mean?
Well, that's directly being the A providing the corporation with
capital.
Right.

Or we save it in banks and banks lend out
to again we said there is no financial system.
But this is why the financial system intermediates between the
households and firms.
But in the simple diagram, households we give, we save
and we just give this money to firms to undertake
their activities.
Right.
So factors of production include not only labour but also
capital.
And capital comes in very different forms.
Okay.
Um so that's this line here.
These are the blue lines are the ones that households
provide firms.
And then um, uh, what do the firms provide households.
Well, the production of goods and services.
We are consumers, right.
We buy things like, you know, Apple computers, which all
of you have.
And we also, you know, go get haircuts.
So that's part of a service, right?
Obviously very, very easy to understand.
And then firms also pay households.
In what form will labour income.
If you work for a firm you're going to get
labour income.
But that's not the only kind of income.
There is also a return on your capital income.
So for instance, if we bought stocks of Apple shares
or Google shares, then they um, you know, there's a
there, there, there gains uh, capital gains.
Like, you know, we earn more from the dividend payments
or our stock prices went up.
Obviously that's a return on on capital.
Um, or we lend to a firm and that becomes,
uh, interest income, right?
That we can get paid in terms of capital.
Okay, so this is why these things are equal to
each other, right?
Production equals expenditure equals income because of the circular flow.
Now let's take a very simple example.
Okay.
In the real world it's not going to be that
simple.
And in your quizzes it's not going to be that
simple.
But it helps to start us thinking about, you know,
what it means for the three approaches.
Now, Palmdale is a small country with one employer, BIC
pen, which makes pens and it makes 10 million pens
per year, right?
Remember that the flow concept is over a period of
time.
That's per year.
Now the market price of a pen is $2.
Pennsville has 100,000 citizens who are the workers in the
factory.
So 100,000 citizens all work in one factory.
There's only one firm and 100,000 citizens or households.
Uh, Big pen owns the inputs and its own machines.
So it only needs to hire worker.
So there are no other inputs.
Just labour is the only input.
Now to determine the market value of production.
This is the market value of production.

So obviously there's a price involved okay.
So production is the number of pens times the the
cost or per pen or the value per pen.
And that's $20 million okay.
So that's the production approach right.
How many of you produced um the market value of
that now?
Um, the expenditure approach is how much we spent on
these pens.
Now.
Expenditure process 10 million pens times $2 per pen is
20 million.
Wait a second.
How many pens were actually bought?
What if only 5 million pens were bought?
Does that mean that expenditure is 5 million?
No, because that five other 5 million, the unsold inventory
gets also counted as expenditure because you want to think
about that as the firm buying these pens and holding
it as inventory.
This is why it's a little bit confusing, but I'm
trying to emphasise the parts that could trip you.
Unsold inventory gets counted as um, as um, as also
an expenditure.
Okay, so if you are a factory and you have
lots of unsold cars in your factory, this also counts
as if it's bought.
So remember that GDP is not just the sales of
good, it's the production of goods.
Right?
Because a lot of the unsold stuff also gets counted
because of inventory.
So it's not the sales but it's the production.
Now the third income approach.
Now, if we make these pens, who makes them?
Well, the citizens.
And we have to compensate them for their labour.
And so let's call this labour income that we paid
out x.
Okay.
So obviously 20 minus x 20 million minus x.
We we got you know the revenue is 20 million
minus x is how much we paid.
What is that.
Accompanies.
Profits.
Okay, so whatever.
It's not paid out to labour and capital and all
that.
What's ended up with that is profits.
But they have to add up to 20 million.
So income of this particular little place, Pineville is actually
20 million.
So that that accounts that amounts to the equality of
these, um, of these three things.
Okay.
So that's a very, very simple example.
Unfortunately, you're not going to get such simple questions, but
it helps to start to think about why these three
things are equivalent.
Okay.
So.
Let's go in a little bit more detail.
As we've mentioned here, GDP is within borders.
And over a time period now the production based accounting
which is in principle quite complicated.

Why?

First of all there's a concept called value added okay.
A company's value added in a production process.
And if you sum up all the value added of
each firm, then that gets you a production based GDP.
Okay, so let's say that a car that you bought
was, let's say £10,000, okay.
That £10,000 of car is the market value of the
car, but that includes the value of the engine and
the seats and the leather and the wheels.
You don't separately count them right.
You don't count £10,000 of car plus the value of
the leather plus the value.
No, because that's double counting.
Right.
So.
Lots of things are made in different stages.
In fact, most things are made with different stages.
Okay, in each stage, a firm or multiple firms contribute
to the process and they have a value added, the
add value to the production process.
It's going to be very clear when we take a
coffee producer example later on, but the idea is the
production based approach is the sum of the value added
of different firms.
And by the way, it's domestic firms, right?
Domestic firms.
Because today lots of things that we see, you know,
a microchip, a Boeing aeroplane is made of components from
all around the world.
Apparently Boeing has millions of components from I don't know
how many, many, many different countries.
Okay.
And each stage of that making that chip or that
plane.
Um, now we call this global value chain, right?
There is value added in the process.
I'll take your example.
Apple iPhone okay.
That's the simplest example.
In fact, um, most of these stuff in Apple iPhone
is not made in the US, right?
Whether it's the chips or the the screen or lots
of different components in the Apple value.
And the Apple phone is made all around the world.
But guess what?
Even though this phone is produced in a country like
China, um, the value added of China in that phone
was something like 4% in the 1990s or 2000.
Okay, it's grown a little bit to maybe 10%, but
that's not very much.
But the whole Apple iPhone is assembled in China and
the ship back to California, but the majority of the
value added is actually sitting in Cupertino in California.
Right.
Because the value out of Apple is design.
It's the content.
It's everything else.
It's not the production.
So if you count the Apple iPhone, each value added
of a firm in making that, you sum it up
and that is actually the value of this iPhone.
Okay.
So I hope that's more clear about what we mean
by value added and production based approach, which is summing
up every domestic firm's contribution to that particular process or

value added.

Okay.

So in that sense, what is that value added?

It's the firm's sales revenue minus the firm's purchases of intermediate products from other firms.

Remember this is a production based approach.

It's not expenditure based okay.

That's the mirror opposite of that.

But it's production.

So it's the sales revenue minus the purchase intermediate products from other firm.

Is the value added.

Okay.

Um, let's look at the expenditure approach more closely.

Now when we talk about GDP okay.

In the news or you know, whatever um, politicians discuss it, it's usually expenditure expenditure based approach.

Right.

When we decompose GDP based on the expenditure approach there are five categories.

The first is consumption, the second is investment.

The third is government spending.

The fourth is net exports.

You add up these four things together and you get GDP expenditure.

When we talk about demand right.

An economy's demand oh this country's demand is high or oh this country's demand is low.

That's what we usually talk about because consumption is obviously a demand.

In fact investment is also coming from the investment.

Sorry.

From the demand side.

It's the firms or you know, you guys wanting to invest in stuff.

Right.

So that's also demand government spending same concept and export.

So when we talk about demand it's this expenditure approach that we're talking about.

We don't actually go and talk about production based approaches where firms value added summing up together and talk about GDP.

And you know, whether we're in a boom we're usually talking about demand.

But again it's the it's it's equivalent of the expenditure approach.

So let's talk about each one of them in detail.

Consumption easy to understand right.

What you consume.

But again that also consists of things like uh services okay.

Um.

Second investment a little bit trickier.

Again these are all are they flow variables or stock variables.

Consumption investment.

Are they flow variables or stock variables?

Flow variables.

Good.

Okay.

Just keep make sure that you keep that in mind.

Okay.

It happens over a period of time.

Now investment is new physical capital bought by households or firms domestic households or firms.

Okay.

So easy to understand.
If you're firm you have to invest in new equipment,
new machinery, new factories.
That's obviously, um, investment that happens over a period of
time, right?
Uh, consumers maybe purchase of new housing.
Now, there's a tricky thing here.
Now, if you were to buy.
A flat that's pre-existing and that you just simply bought
from somebody else did that.
Does that count as investment?
That's a trick question.
You obviously spent money, but remember that investment in the
national accounting sense is different from we usually talk about
investment in our daily lives, like invest in a stock
or invest in a bond.
It's different, right?
And firm in terms of national accounting, a transfer of
assets or ownership of existing stuff doesn't count as investment
into buying new stuff.
Okay.
So that's very, very important.
It's potentially confusing.
If I were to buy somebody else's house that's already
been around for long, it's just a transfer of ownership
of that asset that doesn't get counted.
If I buy a stock, is that new investment or
new capital acquired?
No, because I'm just, you know, getting an ownership in
Apple stock.
But Apple is going to use that money that you
gave me to potentially invest in new machinery and new
factories and that gets counted as investment.
Okay.
So that's potentially so financial capital or financial investment is
not in our sense in the national accounting sense counted
as investment.
It's something else we're going to talk about.
It's going to come out in the income approach but
not in the investment approach okay.
So that could be potentially tricky.
So I guess the way to think about this is,
you know, is it actually used or spent on something
that's produced in that time period.
Is it a new stuff that's actually produced in that
time period.
Right.
So so a lot of the housing stock, housing as
a stock doesn't count is not being counted as, as
investment.
Um, okay.
So government expenditures on goods and services, um, we're going
to take a look in the end at the data.
And you know how these have contributed GDP over time.
You know, how much consumption is contributed or how much
government, how big is the government.
We're going to take a look at that.
But let's just take a look at each of these
components.
Now government spending easy to understand right.
Obviously defence you know in times of war obviously government
spending is going to skyrocket.
So is GDP in that sense because of government spending.
Um, things like infrastructure, health okay.
Um, defence spending all gets counted as government spending, government
consumption.

But there's one exception.
Uh, transfer payments, social security payments, transfers don't get counted as government spending.
Why?
It's simply a transfer of, you know, income to another person.
It's not actually spent.
It's actually this is not going to be spent on the purchase of something new, okay?
That's the difference of Social Security payments doesn't usually get counted as a government expenditure.
Um.
Okay.
So exports.
Now if we export a lot.
Right.
Because that stuff is produced domestically, even if, you know, for lots of small countries, exports or trade as a share of GDP is often more than GDP 150%, all these small European countries have over 100% GDP in terms of exports or trade in general.
Why?
Well, because the stuff is produced in the nation's borders, but it doesn't necessarily have to be consumed here, right?
It can be consumed around the world, but that obviously contributes to GDP.
So exports obviously positively contribute to GDP.
If exports are high that tends to raise your your GDP.
So so in that sense um we're going to talk about short run macro and short run and what causes booms and busts.
But anything in these categories gets counted as push boosting GDP.
If you if you increase it right.
If consumption rises, that increases GDP.
If we invest a lot increases GDP, government spends the same thing.
Net exports is increasing.
That also contributes to GDP.
So if the whole world loves to buy, you know the jeans that your country makes that's going to increase your GDP.
So in that sense we need to take out um, imports.
Right.
Imports obviously got counted in consumption and investment or government spending.
Why.
Because that stuff that you spend on.
Right.
But that stuff is not produced within that borders.
So you have to subtract imports.
So x minus m is the concept of net exports.
How much you have net export on net.
If it's positive then you're an exporter.
If it's negative you're a net importer.
And that contributes or subtracts from um from uh from GDP.
Okay.
So that is the expenditure approach.
And again this is often what we talk about when we measure GDP or we discuss about GDP what causes GDP to rise or fall.
It's often this demand side.
And that's the expenditure approach.

Now income based accounting sums up income that's paid by
labour and owners of capital okay.
So there are only two factors of production here.
There's labour and there's capital Labour.
What do you get.
Well you get income.
You get wage income.
You get salaries.
But you could also get things like bonuses.
Okay.
Um, capital now includes not only physical capital like machinery
and tools and all that, but also financial capital okay.
Stocks and bonds.
Now, many of you, if not now, in the future,
are going to earn two types of income, both types
of income, both labour income and capital income.
So basically you work okay, you don't spend everything or
let's hope and then you save some and that saving
is going to be, you know, going into buying a
house, uh, buying some stocks, buying some bonds or other
or maybe bitcoins, I don't know, um, that also that
all counts as financial capital.
And you're going to get a return on your financial
capital and you're going to get a return on labour
income.
Right?
This amounts to aggregate income.
Okay.
So let's look at a more, um, involved, let's say
example, the kind that I'd like to see you work
out in an exam or on a quiz.
And that actually much more clarifies some of these basic
issues.
Okay.
I think it's an interesting example.
Um, tells us how the economy works.
Okay.
Um.
So we have coffee.
Now there's a coffee and there's a story behind it.
And our job is to use the production based approach
or expenditure based approach or income approach.
They should all end up being the same to.
Value this coffee, right.
This coffee production process.
So let's say there's a factory that buys beans, coffee
beans from farmers for £2.
Okay.
And then so that's one input, right.
The coffee beans.
And then I need a tin I need a tin
box.
So factory buys ten box for £1.
So these are the two different inputs.
Now I get this tins of coffee and I sell
it to a wholesaler okay.
Third parties for £8.
Wholesaler sells to a retail chain for £11.
Retail with some marketing sells to the public for £15.
Okay.
So you're going to get this kind of question you're
going to ask okay.
Use the production based approach to look at value added
in each process.
Now I'm going to suggest a way that's going to
be the easiest and the most transparent.

Okay.

So here's the the method.

First of all you list who are the parties involved okay.

Then you'd say what are the intermediate goods? How much did I spend on the intermediate goods of other firms?

By the way, a household can be a firm, right?

A firm can have one employee, right?

So the coffee bean farmer or the tin maker can also are also firms in that sense.

And remember that value added is um revenue might minus intermediate goods okay.

So that's value added.

So when the farmer buys the beans from um sorry, the farmer sells the beans to the factory for £2.

What's the farmer's intermediate input?

Well, let's for the sake of simplicity, assume that's zero because it's not in the story.

Okay.

But he gets to.

So what's the value added of the farmer?

Well £2 okay.

And what's the value added the tin maker because he sold it to the factory for £1.

Well the value added is one.

Now more interestingly the factory bought it for a total of or sorry, the factory sold it to the wholesaler for £8.

That's the revenue.

How much do you spend on inputs one plus two, three.

And the value added for the factory is five.

Now.

The wholesaler spent was able to sell to the retailer for 11.

How much did he spent?

£8.

So the value added is three.

The retailer bought the coffee tin for £11 and he sold it to the public for 15, so his value added is four.

Guess what?

When you add up these value added it's 15.

Okay.

And what's the expenditure approach tell you.

Well how much does that how much did we spend on the coffee bean.

15 in total.

Right.

So that is the value added production now income.

Well we don't know how much income was paid to how much exactly was income to pay to all these.

But they have to add up to the same.

Basically you got 15 in terms of revenue.

You have to distribute it to labour and to capital.

End of story.

Okay.

So that process I think will help you.

Otherwise it gets gets kind of confusing.

And there are trust me, lots more convoluted examples in the real world that some of it is in the in the chapter end of the chapter exercises that you can definitely take a look at.

Okay.

So that's, um, that's kind of the kind of problems

that you would, you would probably want to solve in
the first lecture.
But let's, let's try to tie it up with a
little bit with the real world okay.
Remember that all these components are really important, right.
When we talk about governments trying to stimulate demand that
often trying to stimulate your consumption, trying to get you
to consume more, trying to get business to invest more,
you know, and sometimes if you guys don't want to
spend, the government will build roads, build into infrastructure, um,
or even defence counts as, as GDP.
So how much does it actually matter for the, uh,
for for the, the country, for the economy?
This is the US, but it's not too, too dissimilar
from the UK.
So consumption accounted for in 2022 out of the $25.7
trillion of US GDP, about 68%.
Okay, 70% was pretty high.
Let's look at this figure.
So this is historical.
Um, uh, share, uh, distribution, a share of each of
the component of income for the United States, 1929 to
2022.
Now, what you see is that for consumption, it was
actually pretty high to begin with, almost accounted at 80%
of GDP.
But now it's accounting.
It's accounting for around, um, slightly higher.
Now these are these are not the.
Yes.
So anyways um, uh slightly lower, um shares of GDP,
but it's pretty much flat now this is pretty high
okay.
So the US, UK are all consumer driven economies.
Consumption is quite, quite large for a lot of the
developing countries.
This is like 40% or 50% of GDP.
A lot of it is exports.
A lot of is investment.
Uh that's when we talk about, you know, um, a
weak demand economy is is something as an economy that
doesn't have a lot of consumption bases.
And that's not true for the US now, um, government
expenditure, government was quite small in the 20s.
Uh, if you look at this grey line.
But obviously it shot up what happened.
We all know, um, uh, during wars and um, but
relatively compared to before the government, uh, governments are larger.
Okay.
What's interesting about investment as a share of GDP is
that it's been pretty flat.
Okay.
Um, this is despite everything that's happened in technology and
productivity.
You know, we talk, you know, now we talk about
AI.
But really, AI has been an investment, uh, for decades.
Right?
And only now are we seeing some of the productivity
increases, uh, you know, pretty much two decades later.
But investment as a share of GDP is pretty also
pretty much constant.
Now we can see what happened after 1985.
I know all these lines look pretty flat to you,
but if you look very carefully, they do represent, you
know, this is a there's a share of US GDP

and US GDP is very large.
So even small percentage changes are big.
Um, there has been an increase in trade, right.
Whether it's exports, US exports or US imports, that has
um, increased, especially since the 1980s.
That was a period.
A subsequent period was called an era of hyper globalisation.
Okay.
The 1980s led to a huge boom in trade.
This is why some of the controversies are are around
us now, because basically there was a fragmentation of supply
chains.
As we mentioned, all these stuff that's made are made
in different countries, um, because trade costs has fallen, because
information technology, because, you know, transport, shipping costs have fallen.
So that has led to a rearrangement of global trade
and fragmentation of the supply chain.
And that led to a huge, um, increase in global
trade.
And that's why even as a country, as a US,
which is not really a trading nation in many sense
increases export and certainly increased a lot of its imports.
Okay.
So these are the different components.
So if we look at this consumption is by far
the most important part of GDP during the pandemic.
A lot of these governments US government, UK government, all
uh, went to stimulating consumption, right?
Household vouchers and all that.
And it did actually make a big difference.
Um, so this is the payments, uh, to, uh, to
factors of income.
Okay.
Um.
So the average payment to labour, uh.
Uh, as a total percent of total income.
So between 1929 to 2022 is about 67%.
Okay.
So 67% of income gets distributed labour.
Um, what is interesting, and this is, uh, labour income
includes wages and salaries, but also other labour benefits.
Okay.
This doesn't include transfer payments and all that, but these
are, you know, bonuses and other kinds of compensations.
But what is interesting is that there has been a
general decline in the share of labour.
The share of income that's distributed to Labour has fallen
over time.
We can think about potentially reasons why.
I want you to think about that for a second.
Um.
Now this is, um, income, uh, sorry, uh, paid to
capital.
So we're showing these two graphs as the final two
slides telling you what happened in the real world.
We looked at the components of demand expenditure.
Now we're looking at the components of income.
Okay.
So what kind of income?
Uh, capital income are there, broadly speaking, whether corporate profits,
okay, corporate profits, whatever is not paid out in terms
of labour, but also what is not paid out in
terms of dividend.
So a lot of these companies will have, you know,
a lot of corporate profits, but a lot of it
is paid out to shareholders in terms of dividend income.

So what's left is called profits.
Right.
So even though profits have been declining as you can
see dividends have been rising.
Right.
The amount the profits that actually paid out to shareholders
have been rising.
This is also part of the reason why maybe the
Labour share has fallen.
Okay.
We'll come back to that.
Um.
Rental income.
That's part of capital income.
So if you own a house, if you own a
flat, then, um, you get a rent and that that
counts as rental income.
But interest payments, okay.
If you borrow and you have look banks get you
know, banks a lot of their income is coming from,
uh, interest payments.
Right.
They lend to other firms or lend to households or
whatever it is, or rich people and they get interest
payments.
I was wondering, you know, why was it so high?
It was very low.
And then suddenly it became really high in this period.
And so basically in the mid 1980s, interest rate shot
up.
By 1980, US interest rates, um, hit 20%, the highest
ever.
The record low was 2008, which was 0.5%.
Okay.
And this period is a period that we're kind of
experiencing now, which is a really hyperinflation period for the
US.
So Paul Volcker, the fed governor, fed chairman at that
time had to raise interest rate, really jacked up interest
rate to kill inflation.
So that's why the banks were earning a lot of,
um, if you were a lender or creditor, you were
earning a large part of the income.
And so this is the distribution over time.
Now, um, interesting ways to think about why the Labour
share might have fallen over time.
That's relevant for us today.
Right.
If we think about, you know, all these, I don't
know, labour unions and all these um, yeah.
All this, um, you know, the bargaining power of labour,
there has been a global decline in the share of
labour.
Okay.
It used to be much higher.
And so, um.
What really caused that, or half of the reason was
related to technology.
So basically the cost of capital goods went down.
Think about it.
Think about information technology and about computers and what happened
to firms.
Firms started to switch from employing labour to employing capital.
Right.
So there has been a general decline in the share
of labour in that.

And that's that counts as half of the half the
story, the other half the story has to do with
the fact that there's more market power of firms and
they're able to pay out less labour.
And so in the very last minute, we do still
have one minute.
So, um, I bid you to think about one question.
You know, in that sense, what we what given what
we have learned today, uh, how does things like AI
improvements change GDP?
Right?
How does AI change GDP?
Well, I can offer you a few thoughts, but I
would like you to think about this.
So first of all, there's potential productivity increases right.
Productivity improves all of our you know, labour.
We can produce more stuff.
And based on the production approach we know that GDP
goes up.
Um maybe there are price reductions right.
Things get cheaper.
So our real income increases, it might lead firms to
invest more because we adopt new technologies.
And obviously investment counts as GDP.
So that goes up.
But there could also be a potential to reduce jobs.
So Labour share goes down and maybe we are going
to work less.
But we could also be healthier because of the new
technologies and what telemedicine and things can do.
And so that leads to productive labour force.
Now, this is by no means an exhaustive list, but
I'd like you to get to using the framework that
we have, um, learned today to think about some of
these new world issues, real world issues.
Okay.
Thank you.
And see you on Thursday.
You can.
Well, um.
To.
And then.
Such a drag.
I.
Gotta.
Be honest with.
You.
Guys.
Who are you?
I need to know where this.
You guys.
God.

Yeah.
Let's stop.
That's.
So.
You.
Okay.
Good afternoon everybody.
We're going to get started.
Uh.
Welcome back.
Uh, second lecture.
Continue with our macroeconomics of this term.

Um, good to see all of you back.
So let's start with a review of what we actually
did.
Uh, last lecture.
Okay.
You want to see these two lectures as a block?
Uh, what we're trying to understand is what constitutes GDP.
How do we measure GDP and what are useful comparisons
over time, uh, and across countries about GDP.
And today we're going to add one more topic, which
is inflation.
Now, as we all know, uh, in the recent couple
of years there has been high inflation.
We're going to get to kind of answering why inflation
has gone up or what to do about, and why
we're so concerned in some of the later lectures.
But you really want to see these two lectures as
building blocks for much of what we are going to
do.
Um, subsequently.
So.
Last time we talked about measuring GDP based on the
three methods, right production based, expenditure based and income based.
And that should in principle be the same, because that
will tell us how much income that country or how
much aggregate activity that country had over a period of
time within the borders.
Now, I want to get you to think about why
these GDP measurements, as it's conventionally defined, is potentially problematic.
What kind of things it leaves out.
And, um, you know, what are what are the right
ways to think about GDP or what are the, the
the appropriate uses of GDP?
Okay.
Um, so we didn't get to one a few questions
last time.
Okay.
Checking on your understanding about GDP measurement.
So let's just try a small exercise.
Uh, right now, uh, we're going to do a little
bit more experimentation, this lecture to be a little bit
more active and interactive, I'm sorry.
And to see, um, what the impact is and then
what we reassess.
Okay.
So, um, first thing, just to check on you guys
whether you've really understood what constitutes GDP, uh, is tearing
down a building.
Does that count towards GDP?
Who?
Who wants to answer?
Oh, no, no it doesn't.
Okay.
Um.
Anybody else?
Disagrees.
No, it's good that you guys think about this and
then shout out whatever you think about it.
So then you go through the process of thinking about
what you might have missed or whether you have fully
understood.
Um, so remember that we we did say that GDP
is anything that happens over a period of time that
adds to, uh, production.
Right.
And so, um, tearing down a building is kind of

interesting as a, as an exercise.
Lots of countries tear down buildings and build buildings again.
And do they should they count as GDP?
Does anybody else have a view?
Go ahead.
You shout it out first.
Yeah.
You build up the building and.
Not.
Okay, so we're getting at another view, which is GDP.
Uh, you tear down.
So that involves some costs and that involves some income.
You wanted to say.
Okay?
Yes.
Okay, that's a different view.
Uh, it's very good to, uh, for all of you
guys.
All of you.
What?
You guys said we're all reasonable, but let's kind of
process this.
So, um, this gentleman said that if it was originally
a shop and you tear it down and before employee
people and a sold stuff, now you don't have that.
It can reduce GDP, right?
Okay.
So that's a good exercise for you to kind of
capture.
Now again we're not talking about what is productive or
not right.
We're just talking about what counts as GDP.
So the answer is tearing down a building does count
towards GDP.
And for a few a variety of reasons.
One is you need to there's some costs involved, right.
You need to hire workers to tear it down.
You might need to you definitely need machines and equipment.
And that is an input cost.
And then these people get paid.
Uh, and that's a market transaction.
Right.
So that that's one reason.
Now think of another reason different from what was said
about the shop, which is, you know, true.
But the value of the land also changes, right?
Because for instance, you know, different examples.
If there was an empty shop before and nothing, nothing
was occupied.
Now you tear down that shop and suddenly the value
of the land is potentially worth more because it's no
longer tied to a specific shop that constrains the activities.
Right?
So or it could go down if you know what
you built in is less.
But that's that's a different kind of transaction.
That's a different value.
But the land itself is going to be worth more
when it's not tied to a specific building.
So that's another thing.
There could also be investment going on in tearing down
the building.
Right.
So all of that creates, um, some activity.
Now what is true is that you might not think
about that as being very productive.

Right?
If all we did this year was just tear down
all the buildings and we created GDP, and you didn't
do anything else other than that, then it doesn't sound
very, you know, productive use of, of the resources, but
GDP doesn't have anything to do with that, which is
why it leads to a very interesting question.
You know, lots of countries in the past, Japan and,
you know, East Asian countries now, China, they've been labelled
with building infrastructure, building bridges to nowhere.
I don't know if they really don't go anywhere, but
it's just building build bridges and highways and railways in
places where maybe you don't even need that infrastructure.
And so that does count as GDP.
That counts as investment, right.
Remember the expenditure approach.
It's consumption investment, government spending expenditure and net exports.
So that counts as investment.
And once you invest it actually counts as GDP.
Now overbuilding you know property also you know we're talking
about the property sector.
Lots of countries lots of places overbuilt.
That also counts as GDP.
Even if nobody inhabits.
Right.
So again, um, coming back to the intuition, our our
first intuition, this might not look very productive but actually
does count as GDP.
Okay.
Now in the next lecture we're going to talk about
productivity.
Now that's very crucial.
Um because productivity actually measures efficiency and measures whether there's
something something useful about this or not.
But GDP itself doesn't okay.
So this is the reason why, um, tearing down a
building would be, uh, counted as GDP.
Just also another check.
Um, what about if I buy a company stock?
Okay.
I bought, you know, $1,000 of Google stocks.
Does that count as GDP?
Those who say yes, raise their hand.
Okay.
Those who say no.
Okay, a little bit more for no.
And.
The answer is no because it's just a transfer of
assets, right?
Nothing.
No goods and services was bought in this in this
period.
It was just a transfer of your ownership of Google
and to mine.
But Google then uses the money to buy new equipment
and new computers and new, you know, whatever they're doing.
And that counts as GDP.
Okay.
So again, there are things that will be confusing.
But you know, this takes a little bit practice.
But first of all think about whether there's some new
goods and services and new capital bought over a period
of time.
Or it's simply a transfer.
Now, social security transfers in the sense that the government
pays, you know, transfers Social Security but doesn't amount into

goods and services bought over a period also doesn't count
as GDP.
Okay.
So this is so building highways and railways and bridges
to nowhere also does count.
Okay.
So now we're going to talk a focus about you
know, these two things focus on limitations and whether GDP
is a measure of economic well-being.
Now all of you can have some views about that.
And then we're going to move on to price indexes,
inflation real nominal GDP now as a measure of economic
activity.
Yes.
We said that is true as a measure of economic
well-being.
Well let's let's think about that.
Now.
There's another concept now that slightly differs from GDP, which
is called GNP gross national product.
Okay.
GDP is production in a country within its border, regardless
of, you know, who owns the labour and capital.
So all of you work in the UK, you're all
going to contribute to GDP.
But many of you are countries are citizens of other
countries.
So gross national product records the production of domestically owned
labour and capital.
What does that mean?
So let's say you are an American.
Okay.
Uh, you work in London now.
You contribute to GDP in the UK, but you will
contribute to GNP in the US.
Okay.
Because gross national product is the difference between gross GDP
and GNP is the net factor income of the citizens
okay.
It's net because why there are also foreigners who are
sorry.
There are also foreigners who are working in the US.
Right.
If you're counting US GNP, there are Americans working here
and the foreigners working in the US, and these foreigners
contribute to their country's GNP, even though they contribute to
the US GDP.
So it's a net, uh, income.
Okay.
And this income again, we talked about what constitutes income
from last lecture, which is capital income and labour income.
Okay.
So it's not just how much you earn in terms
of wages, but also the assets that you own.
Now for a country like the US, um, the GNP
and GDP is not too different.
There's a little bit of difference there, 400 billion, uh,
$17.1 trillion of GNP in 2013 compared to 16.8.
Um, and we can check the 2022 numbers, which is
not too different.
Now.
Consider a country like Ireland, okay?
Ireland's GDP was $533 billion in 2022.
Ireland's GNP gross national product is $412 billion.
That's a 30% difference.
So Ireland's GNP, or GDP, is much bigger than Ireland's

GDP.

Okay, why might that be?

So just wrap your head around this concept, right?

Basically, if Ireland's GDP is greater than GNP, that means Ireland is richer than the Irish.

Right.

And so Ireland has a particular, uh, a feature of its economy, which is it's often where multinationals, because of tax incentives, like to locate their headquarters like Apple and, you know, Amazon etc. in Ireland they can pay lower taxes.

And so, yes, they count as Ireland's GDP.

But then guess what?

The profits get repatriated back to, you know, the US or the UK or wherever it is.

Right.

And a lot of people and so.

Um, and so even though a lot of is happening domestically in the domestic borders, uh, the, the, the transfer of income flows out of the country because of its unique features.

It's a lot of the a lot of the foreign multinationals choose to locate there.

So in that sense, that's a 30% difference in GDP and GNP.

So, um, when you go through these problems, you know, the difference is a net factor income, right?

So it's net so it's it's the it's the, um, income owned by earned income earned by a domestic citizen, uh, minus the income earned by a foreign citizen.

Okay.

And that is the net factor.

So, for instance, I'm a domestic, I'm a UK citizen, but I work in the US.

I work in, you know, uh, France and Germany, etc..

You count that income towards, uh, the country's GNP.

But you have to subtract the French and the Germans who work here and the income they earn.

So it's a net factor income.

And it's not just labour, but it's also capital, okay.

And usually it's pretty much, uh, it's not that that different, but in some cases it is.

Now GDP amidst quite a quite a few things.

And we're going to talk through these things and they are important.

Okay.

So first of all it admits depreciation of physical capital stock and resources.

And that could be big right.

So all the wear and tear of the equipment um, the uh, you know, the, the, the the buildings, the depreciation of the capital stock is not counted as GDP.

But if you think about it, I mean, there was if there was a market value attached, the computers you owned from year to year, they should be going down.

Right.

But instead, you know, it's not it's not counted.

But if you just, you know, if you think about it, it's a value of something.

It should be accounted.

But it's not.

So physical depreciation is not counted.

And you'll see in the growth theories that this amounts to these are very important um numbers.

And the second thing is it doesn't count negative externalities such as pollution, noise and crime.

Okay, now obviously the environment is one very important example right now.

Now here is a debate that's been going on, okay, about the green transition, about sustainability.

No doubt you guys have been engaged in these, uh, these discussions.

Now think about a developing country, developing country.

What is its main objective?

Well, its main objective is to get more prosperous.

Right.

Get richer.

And so that usually is counted as increasing GDP.

Now if you increase GDP, you can do it multiple ways.

You can, you know, increase your investment.

You can also export more, which is what developing countries do.

Developing countries typically go through the cycle of well, you know, I have very, very little domestic consumption capability.

So I'm just going to produce stuff for the rest of the world.

Right.

Even if I, my, my, the citizens, my residents are poor, I can give it to the rich Americans, the rich birds to produce.

Right?

So they export and that increases GDP.

But guess what?

A lot of it is not very clean, right?

A lot of these industries are not very clean.

So.

You know you can do really.

You know, you can use coal and you can all use these, uh, environmental and friendly, uh, production process.

And that counts as GDP because you're increasing aggregate productive productivity.

But over time, more and more, we believe that the fact that it doesn't count these things, especially the environment impact, um, is, is a potential, uh, fallacy.

But today, developing countries and advanced economies have this kind of very tense relationship in this respect, because on the one hand, the green transition requires everybody to adopt a cleaner technologies.

But on the other hand, this is much more costly.

If this is going to be more costly, the GDP growth will inevitably be slower in developing countries.

So that is a trade off right.

So again GDP doesn't account for the full um spectrum of economic activity.

Now.

Um, it also doesn't count transactions conducted in underground in informal economy.

So one way to uh, keep a tap of, you know, how what count, what gets counted and what doesn't get counted is to think about whether there are actual market transactions that are, you know, kind of recorded and officially recorded.

So if you haven't made, you know, you're made or some taxi drivers, when you're travelling, asks you to pay them in cash, right.

Why potentially to evade taxes that doesn't get counted as, um, the, uh, GDP because it's not officially transacted and it's not officially uh, um, recorded.

Now, informal economy is very interesting.

Uh, in some countries like the US developed advanced economies, this countries have only about 10% of GDP.

Okay.

It's still still sizeable, but in some countries it's more than 50%.

Okay.

It's all in the informal economy.

Some countries, like Peru, um, have about, uh, 70% of GDP, uh, as informal, uh, uh, half of the, you know, many uh, Caribbean countries, countries in Africa have half the labour force in the informal sector.

None of that gets counted.

But this is big, right?

70% of GDP is obviously big.

Now, I'm not saying that we're underestimating GDP in Peru by 70%.

Now, some of these countries have a way of tallying informal economy, economic, uh, activity.

But um, uh, in many advanced economies, uh, that's not true.

Now, one really important, uh, part of, uh, economic activity that's not included is home production.

Okay.

And you're going to see in one of the quizzes or the textbook that, uh, you know, you used to, uh, um, hire, uh, let's say you hired, um, a gardener to clean your garden, and then you end up marrying your gardener and the gardener, your gardener, husband or wife does it for free.

So then GDP actually goes down because that that particular activity is no longer counted.

Right?

It's not longer counted because it's not an actual market, uh, transaction that's recorded.

But this is really important when it comes to especially the female labour force, when a lot of the home production is about childcare or potentially cooking and cleaning.

Um, if you look at the data, women still take up more of those kind of jobs than men.

And it's a particularly pronounced during Covid times, right?

Covid times.

Everybody's at home.

Okay.

Um, everybody's at home and you take care of.

You used to have a nanny.

Now you can't have a nanny.

You're going to take care of your kid.

Although you used to have a cook.

Now you have to cook alone.

So quantitatively, in normal times, home production, uh, amounts to about 20% of GDP.

So 20% of GDP actually does not get counted.

But they should be economic activity, right?

Why should the fact that I'm taking care of my child not be counted as an economic activity when it is counted, when I hire a nanny to do so?

Right?

Because in some sense, what you're trading off is another thing which is leisure, right?

Leisure is not counted as GDP, but as you, you would have learned in micro leisure is very much part of your utility, right?

Utility isn't derived from just how many apples you consume and how many computers you can buy, but how much leisure you can enjoy.

So, for instance, before I was, uh, just, you know, watching movies when my nanny is taking care of my kid, I enjoy leisure and that gets counted as additional

GDP.
Suddenly, during Covid, I can't hire the nanny.
I can't watch the movie.
I have to take care of my kid.
GDP goes down.
Okay, so now let me ask you a question here.
Uh, Covid, as we saw, you know, during the last
lecture, uh, in many countries, including this one, you know,
GDP fell by 10%, okay.
During Covid.
Now, that obviously does not count home production, right?
So if we were to properly account for all the
things that you used to do with others like cook
and nannies, and now it's home production, if that was
counted, do you think we're better off or worse off
than what is recorded during the Covid GDP?
Or or does does this kind of alleviate the drop
in GDP or it exacerbates it?
So.
This should alleviate some of the drop in GDP.
Right.
Because in fact, it's not like nobody's doing nothing.
It's just a transfer of market transactions back into the
home.
So in fact, we're actually being productive at home.
But it's just simply not counted.
So there's some argument saying that COVID's GDP drop.
And this, you know, in a very massive way was
overestimated because it didn't count as a home production.
It didn't count home production.
Okay.
So another problem of GDP is that some officials like
to, you know.
Um, uh, play and manipulate the data, right?
This is not necessarily true in this kind of countries,
but in a lot of developing countries, they like to
fudge the data and then they overestimate GDP.
And they say that their country is doing much better.
Now, this is probably potentially true if you are, you
know, borrowing from institutions like the IMF, International Monetary Fund
and they say, well, look, you know, only if you
reach a GDP growth of 3%, 4%, whatever it is,
then you can extend these loans.
Now, some of them would like to fudge these numbers.
So there's been alternative measures of GDP to look at
as a gauge.
Some of this is a broad measure of electricity usage
because, you know, that is a good gauge of um,
of uh, activity.
Uh, or it could be cargo movement again, a gauge
of economic activity.
So that's a potential reason why there's some other broader
measures of economic activity.
Uh, for all the flaws that GDP carries.
Okay, so does GDP really actually mean anything?
Does it mean that we're happier?
Well, first of all, this is a graph of, um,
uh, uh, graphing GDP per capita on the x axis.
So how rich you are basically, uh, compared to a
self-reported life satisfaction.
Uh, from 0 to 10, uh, country on average.
This is the World Happiness report from the world Bank.
And um, per capita GDP, uh, is real per capita
GDP.
We're going to talk about distinctions between the two.
And so let's take a look.

What do you see.
So of course GDP is a poor measurement of a
lot of things.
It's just measuring academic economic activity income.
It is measuring income.
Now, first of all, we see that there is a
positive relationship, right?
So it tends to be that, you know, if you're
richer, you tend to be happier.
Now the size of the country is gauged by the
size of the circle.
Right.
So you have and this is a population.
This is 2023.
Uh, China of course, is large, India is large.
This is the US.
And if we were to graph, you know, if we're
to put a slope in this country, uh, in all
of these countries, right.
The slope is positive, right?
The slope is positive.
Meaning means that the richer you are, the happier you
tend to be.
But who falls above or falls below the slope and
who lies above the slope.
That wouldn't mean what that would mean that compared to
everybody else with the same level of income, if you're
above the line, it means you're actually happier then your
income level deems you.
And if you fall below, you're actually, um, a less
happy than what your income level tells you.
So who if we draw a line here.
This way.
Okay.
Roughly speaking.
Who falls below.
Well, a number of these African Afghanistans way below right
for same level of income.
Um, oops.
Sorry.
Uh, for the same level of income.
If you take income constant, you can see people who
live in Madagascar are much happier than people who live
in Afghanistan, right?
India also falls below the average.
So for average India per capita income, you have those
in other countries that are, um, are um, uh, happier.
China is pretty much on the line.
The US is a little bit below the line.
Uh, you know, there's a great book called the The
Death of Despair by, uh, two Nobel Prize winning economists,
um, which shows that, you know, there's actually a lot
of despair going on, even with, uh, pretty rich income
countries, uh, due to loneliness or opioids or lack of
health care, etc..
So again, that comes to the question of what does
GDP actually capture and what it doesn't capture.
Right.
So for instance, what it doesn't capture is also, um,
some of the health, uh, prospects, education, health, social infrastructure,
communities, uh, some of this is not captured in GDP.
Uh, but but but just in in general, we see
a positive slope, uh, relationship between the two.
Okay.
So next, um, we talked about now we talked about
the, the problems with the GDP measurements.

A very important distinction is between the real and nominal GDP.

Okay.

Real and nominal GDP as you see is a difference in measuring.

And real GDP is is really more accurate in, uh, measuring increases in living standards.

Why?

Because some of the increase might just be, uh, price levels.

Right.

So for instance, if let's just say that we were, you know, um, going back to producing, you know, pens from last, uh, last, uh, last lecture, you produced 100,000 pens and each cost, you know, $2.

So you have $200,000 of GDP.

Now, suppose that these you still produce 100,000, 100,000 pens, and these pens went from 2 to $4.

What happened to your nominal GDP?

Well, it doubled from 200 to 400,000.

Right.

But are you actually better off?

Are you actually have your living standards really increased?

No.

Because you're just simply just raising all the prices.

So a lot of what we're going to be, uh, trying to understand is what is real and what is nominal, what is driven by prices and what is actually driving real income levels.

Now, starting from next lecture, when we start this series of growth lectures, we're going to try to understand what drives real standards of living.

And that's going to be fundamental factors like capital, labour or human capital, technology, productivity and all these things.

Right.

But nominal GDP tends to rise when price levels rise.

Okay.

Um, so an increase in GDP will record both increase in actual production and income and increases in the prices of those goods and services.

Why?

Remember that GDP is P times Q for all the goods, right.

And you sum it together, right.

So, so just one, um, one note of um, or maybe one advice or if you want to take it or not, it's up to you on what's easier.

Sometimes, you know, you use these actual numbers to make these calculations.

Some people prefer to use symbols.

Right.

And some simple symbols can actually be more general.

And it tells you a little bit of how these formulas work.

So all of that is fine, right?

So for instance when we talk about GDP it's the sum of prices times quantities summed over all goods.

Right.

There are three goods.

Then it's p1 q1 plus p2 q2 plus P3 Q3.

Right.

Sometimes you might find that to be easier to work with now.

So GDP is going to record both increases in quantities and prices.

So we have to distinguish between nominal and real GDP.

Okay, so nominal GDP is the total value of production using current market prices.
Okay.
To determine the value of each unit that is produced.
Real GDP is the value of production using market prices from a specific base year.
So if you go to the World Development indicators, this is not loading properly.
I was trying earlier.
I wanted to show you just go to WDI from the world Bank.
Okay.
This is going to help you understand some of the differences.
And and if you want to play around with the data now, if you want to just check GDP of, let's say the United States or United Kingdom, there's going to be a few options, right?
One is going to say GDP 2022 2022, uh current, uh dollars.
Okay.
Current dollars means nominal GDP.
Why?
It's because it's using your evaluating the quantities using today's prices.
And then you're going to have another option which is 2022 GDP in constant $2,015.
Okay.
Let me see if I have that here.
I'm not going to show you the I'm not going to be able to show you, uh, the, uh, the, the actual data.
But here we go.
So this is GDP or GDP per capita.
Doesn't matter.
So GDP this is constant 2015 US dollar okay.
So that's going to be uh real GDP as opposed to GDP current US dollars okay.
These two.
I don't know if you can see.
Now current just means that you're measuring the the stuff that's produced using today's prices.
And constant means that you're using the the prices of a base year.
And here it's 2015.
But that's going to mean that this is going to be real, a real GDP, because that's going to be comparing to a base year prices.
Okay.
We're going to see how that works in just a little bit.
But just, uh, just to show you that you can play around with the data.
Okay.
So let's do this example.
Okay.
So let's say that in this uh, economy you produce apples, Big Macs and zucchinis.
And so nominal GDP for 2009 is all the quantities in 2009 using the prices of 2009.
Right.
That's what we we see using current dollars.
Now what's the nominal GDP of 2013.
Well price times quantities uh, in 2013 for all these three goods or three, three or plus many, many more goods.

Right.

Okay.

Now let's compute the real GDP for 2009, real GDP
and for 2009 means quantities from 2009 times the base
year prices.

Base year prices is what its 2009 prices.

Right.

So you're using 2009 prices times quantities.

Is that the same or different from nominal GDP in
2009?

Same.

Good.

It's the base year.

Obviously we're using the prices from that year, if that's
the base year.

Now let's compute the real GDP for 2013.

Now 2013 real GDP uses quantities from 2013, but prices
from the base year base year be in 2009.

So we're going to use the prices of 2009 times
the quantities of 2013.

What does that do that holds constant prices.

Right.

That fixed prices to some extent it's just the prices
of 2009.

And we're only measuring quantity increases.

Now this is a little bit more complex because it's
not just one good.

If it's just one good then the prices just cancel
out and you're just only measuring quantity increases.

If you increase your quantity you increase your GDP.

But here because we have a basket of goods, we
have to do it for all these goods okay.

So that's real GDP.

Okay, so consider a nation of barley that produces peanut
butter and jelly sandwiches.

Okay, let's do this exercise.

Um.

Calculate, I'm going to do this real time.

Uh, well, this is going to be easy, but, um,
calculate the nominal GDP for 2012 and 2013 okay.

Nominal GDP for 2012.

So that's peanut butter is 20 times for 80 plus
100.

Okay.

That's 180.

Um now look at what happened between 2012 and 2013.

Did you produce more?

Yes.

You did.

You produce more peanut butter by ten units and you
produced, uh, jelly by 50 units more.

What about prices?

It also rose.

Okay.

So we want to calculate the nominal GDP for 2013.

This is 30 times 550 plus 200 350 right 350
as opposed to 180.

These nominal GDP now compute real GDP for 2012.

Real GDP for 2012.

Um the base year is going to be 2012.

Right.

So what's real GDP for 2012.

Same thing as it's nominal GDP.

So that's 180.

What about real GDP for 2013?

Okay.

So that will be quantities from 2013, 30 times prices
from 2012, which is four.
So 120 times a plus 200.
So 320 right.
320 is the real GDP in 2013, and the real
GDP in 2012 is the same as nominal 180.
Okay.
So now let's compute the growth rate.
So it'd be 140 divided by 180.
That's a 77% growth in real GDP.
Okay.
What's the growth rate in nominal GDP?
What did we say was nominal GDP was 150 350.
-180.
Divided by 180 is 94% nominal growth rate.
Okay.
So nominal growth rate obviously is higher because prices have
risen right.
Also as quantities have risen and real GDP growth is
lower.
Now for the US last year the real growth rate
was 2.2%.
Guess what its nominal growth rate was last year it
was 9.2% okay.
So nominal GDP grew by law.
But real GDP or real living standards only grew by
2.2%.
And the reason why nominal GDP grows so much was
because of inflation.
And that would be the same as it is in
this country.
So that gets that helps you tell you how to
compute real GDP.
And this is why if we go back to, you
know, these data series, the current is using current prices.
Constant is using prices from a base year and constant
25 2015 means uh base year prices being 2020 2015
okay.
Okay.
So.
Real GDP is the growth is what you're going to
hear about in the news.
Okay.
The world grew by 2.4% in 2023.
That's the official number.
That's real growth rate.
You're not going to hear much about nominal growth rates
okay.
Because that's now you know how to calculate the real
growth rate using a base year prices.
So we want to have some aggregate, um, measure of
um, price levels and how price levels change.
And so here we have two different concepts.
One is called the GDP deflator and one is called
CPI.
Okay.
GDP deflator is basically you want to think about it.
You want to think about it is the average price
level of the economy.
CPI as we'll see the one that you hear a
lot.
Consumer price index is going to be measuring the price
level of a common basket of goods that you as
a consumer, tend to consume.
Okay, GDP deflator is going to have lots of things
that, you know, we'll have some things that CPI won't

have, right.

Um, because it's just a measurement of, of general prices.

But the difference of the two is not that big,

but it's simply a difference in concept.

So how do we calculate a GDP deflator.

We're going to build up slowly to be able to

calculate inflation rates.

Right.

So this is where we're going to go where we're

leading to um GDP deflator is nominal GDP divided by

real GDP times 100.

Okay.

So that's going to count kind of capture.

Remember that the difference between nominal real right as we

calculate it before is going to capture some level of

some level of prices.

Right?

A level of prices.

So now let's calculate the GDP deflator for the nation

of Barney in 2013.

Okay, so 2013.

What is the nominal GDP?

What did we say was nominal GDP was 150 350.

Okay.

350 divided by the real GDP of Barney.

Uh, so using prices from 2012, that's 120 plus 200

and 320.

Okay.

So 350 divided by 320 times 100.

It's going to be 109.

So GDP deflator is 109.

That means that price levels rose by 9% between 2012

and 2013.

If we're looking at an aggregate level right, 109 and

100, that's a 9% difference.

Okay.

So that's GDP deflator.

Now.

Next is consumer price index.

So, um, look, you know, the how this data is

collected is quite monotonous.

Basically, these bureaus, bureaus of economic analysis in the US

would go around and collect what, you know, people tend

to consume.

There could be something like a thousand goods, right.

And it's very, very onerous because you have to collect

the prices in different regions and there's different prices across

regions and so forth.

Um, but it's meant to capture, you know, how much,

uh, prices are rising, uh, for, for an economy.

So just in terms of definition, first, uh, the cost

of CPI is the cost of consumer basket using target

year prices.

Okay.

So let's say we want to calculate the CPI of

2013.

So it's using the cost of that basket using 2013

prices.

Now here's the crucial part divided by the same basket

of goods using a base year price.

Let's say 2012.

In order to measure the changes in price levels over

time of that basket of goods, you need to measure

the same basket, right?

You need to keep the basket constant.

Now, every year, especially over long periods of time, we're

going to change our basket of goods, right.
Um, but it has to be in order to measure
the prices change over time.
You want to keep that basket of goods pretty much
constant.
The weights as conventionally measured in CPI is the same.
So for instance, weights, meaning how much of your expenditure
goes into buying shoes and clothing, how much goes into
laptops?
How much goes into travelling.
Right.
Those are the weights.
Okay.
So let's try this for um, uh, this example, what's
the CPI for the nation of Barni in 2013?
So that would be the cost of consumer basket using
2013 prices.
Okay.
So that would be um the nominal GDP basically.
Right.
The basket using uh 2013 prices again 150 plus 200
350.
Now coming back to the cost of that basket using
base year prices.
That's that basket, which is 30 and 100, using base
year prices for and two 120 plus 200 and 320.
Right.
Okay.
So again it's 350.
Divide by 320, which is what we calculate for the
GDP deflator.
And that's 109.
Now why is that the same?
Why is GDP deflator the same as CPI in this
example?
Well because the basket is exactly identical right.
It's peanut butter and jelly.
But as we mentioned um, in the broader economy, this
basket, the overall price levels and CPI could be pretty
different.
Right.
Or a little bit different.
In fact, in the data they they track each other
pretty closely.
If you look at the textbook, they're not that massively
different.
But when we talk about CPI and inflation rates, that's
generally um, uh, CPI.
Now this uh, for this country, CPI is currently at
4%.
Uh, now in December 22nd that number was 10.5%.
Okay.
So inflation went from 10.5% uh to and sorry.
So inflation how do we calculate inflation.
Well it's the difference of CPI levels across uh across
um sorry.
Inflation rate is the price level in 2013 minus price
level in 2012, uh etc..
Right.
Price level could be either GDP deflator or CPI.
We've computed both.
It's the same.
Right.
9%.
Um.
So.

If it fell from.
10% to 4% inflation rate.
Does that mean that prices are falling?
No, it just means that prices are growing more slowly.
Okay, prices are still growing at 4% now.
Some historical numbers.
As some of you might know, uh, the world has
experienced some hyperinflation.
Episodes like to levels you can't even imagine.
Uh, I don't know if I have the numbers here,
but basically, in Venezuela, prices were doubling every four days.
Okay.
Um, uh, in, uh, Turkey in, uh, between.
Let's see, what are the numbers, uh, Turkey between 2017
and 2020.
Um, sorry, you can't find it anymore.
Anyways.
Turkey between, um, uh, turkey, uh, inflation rates last year
was at 64%, 64%.
So if you go back and look at what happened
to Venezuela citizens, um, you know, basically your money is
worth nothing by tomorrow.
Okay.
So you want to think about what happens when there's
a there's a lot of inflation.
Well, first of all, you're going to probably try to
frontload your consumption, right?
You're going to try to buy stuff today rather than
wait until tomorrow.
And guess what?
The more you buy today and the more it jacks
up prices, inflation is even higher.
Now that's the opposite of deflation.
If you know that prices are going to go down
in the future, what are you going to do?
You're not going to buy today, right?
You're going to wait until they fall.
And what does that do to the economy?
Well, that's very, very bad for the economy because nobody
buys.
And as we know from GDP, if nobody buys, nobody
gets paid and the GDP goes down.
Right.
So deflation is equally bad if not worse.
But inflation for a lot of these countries is very
bad.
Now a lot of times inflation.
And we're going to talk about this much more uh,
in later lectures, um hyperinflation.
So basically defined as I think monthly increases in prices
greater than 500%.
This is not a definition that you need to know,
but just hyperinflation episodes uh, happens during wars.
Right?
Germany has had that.
Hungary has had that in history.
Um, but normally if we look at inflation, let me
look at, uh, let me show you the, the, the
numbers here.
Um, this is, uh, inflation between 1996 and 1982.
And then we're overlapping with another period which is 2013,
to the current, which is now which is, um, this
dashed line here.
Okay.
So, you know, inflation rates being extremely low to the
levels.

Remember that there was a debate in Europe.
I'm not sure if you followed this, but countries like
Germany was struggling to get inflation rate to 2%, which
was its target.
Right.
Really, really struggling to get price level increases to 2%.
And so we had a very, very low inflation, uh,
period, uh, in the 2000 coinciding with low interest rates.
Right.
And of course, that's all gone now.
But if we look at the norm, inflation rates are
higher.
Right.
They're 3 to 4% in many episodes.
Look at 1972.
Uh, in the 1970s, inflation rate for the US hit
almost 2,010% and above 10% in the 1980s.
Remember that last time we saw income payments, uh, divided
into capital and interest income?
Last graph.
And that was very, very high in the 1980s.
Why?
Because interest rate was very high and interest rate being
high was meant to tackle the high inflation.
Again, this is something we're going to discuss much more
uh, in later lectures.
But high inflation or normal rates of inflation is not
1%, 2%.
It's much higher than that.
And what is interesting about this graph for the US
is that the 2013 to the present looks very, very
similar in terms of trend to the 1966 to 1982
trend.
So here we're, uh, you know, inflation rates were were
getting to 7 to 8%, um, even 9%, um, is
is actually not out of the ordinary.
What is out of the ordinary is hyperinflation.
And hyperinflation often coincide with wars when governments want to
print a lot of money and finance their wars.
And that.
You know, begets inflation or very irresponsible fiscal policy, as
we're going to see later on.
So that is an example of inflation.
And as you can see in terms of um, the
inflation increases.
It really started from the pandemic right.
The fed target of 2% or 2% was, you know,
basically under uh, under uh underachieved for many, many years.
And now it's way above the fed target and it
climbed much higher.
So we're expecting higher inflation over time.
So in the last minute or two we already talked
about uh oh.
So I need to tell you one more thing.
We talked about how to compute GDP growth rates.
Inflation rates uh, and that we have already already seen,
um, adjusting nominal variables.
Okay.
You're going to see some examples in this in the
quiz in the book.
But you know, there was an example in the book
that compared President Truman's income with President Obama's income and
found out that president, I think it was President Truman,
was way richer than President Obama in terms of what
he was paid.
So how do we adjust that, um, to be able

to be comparable?

So suppose that a book costs a dollar in 1929.

Suppose the same book cost $10 in 2009.

So which was more expensive?

If the price index in 2009 is 20 times that

of 1929.

Okay.

So the formula here and you will have that in

the textbook of adjusting nominal variables is to use the

value in 1929, which is $1 multiplied by the price

level, uh, in 2009 divided by the price level in

1929, which is 20.

And so one times 20 is basically the value of

the book in 2000, in 1990, in 1929, bought in

1929 valued in 2009 prices.

So it's comparable.

So that would be $20 as opposed to $10 right.

One times 20.

And that would mean that that book in 1929 is

really, in real terms, uh, twice as expensive as what

it is today.

Okay.

So, um, think about what are some problems with measurement

and inflation of prices, just as we, you know, talked

about measurements, problems with GDP.

And I'll see you next week.

Thank you.

Yeah.

I'm sorry.

It's up.

To us.

Uh.

It's the.

It's the quizzes.

Yeah, yeah.

I.

Hi.

Hello.

Hi, everybody.

Today we have our econ lecture.

Hello.

Guys.

Oh, no.

This is recorded off the.

I think.