

Macroeconomics for Global Economy

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<https://smozsoy.github.io>

TOPICS

Banking System

Money & Money creation in the modern banking system

Money & Inflation & Interest rates

Exchange Rate Determination

National Income Accounting

QUESTIONS

Q1: Is Bitcoin money?

Q2: Why is the price of gold increasing (or not)?

Q3: Why is inflation high in Turkey and low in EU/Japan?

Q4: What causes inflation?

Q5: How to forecast USD/TL exchange rate?

Preliminaries: Market Economy

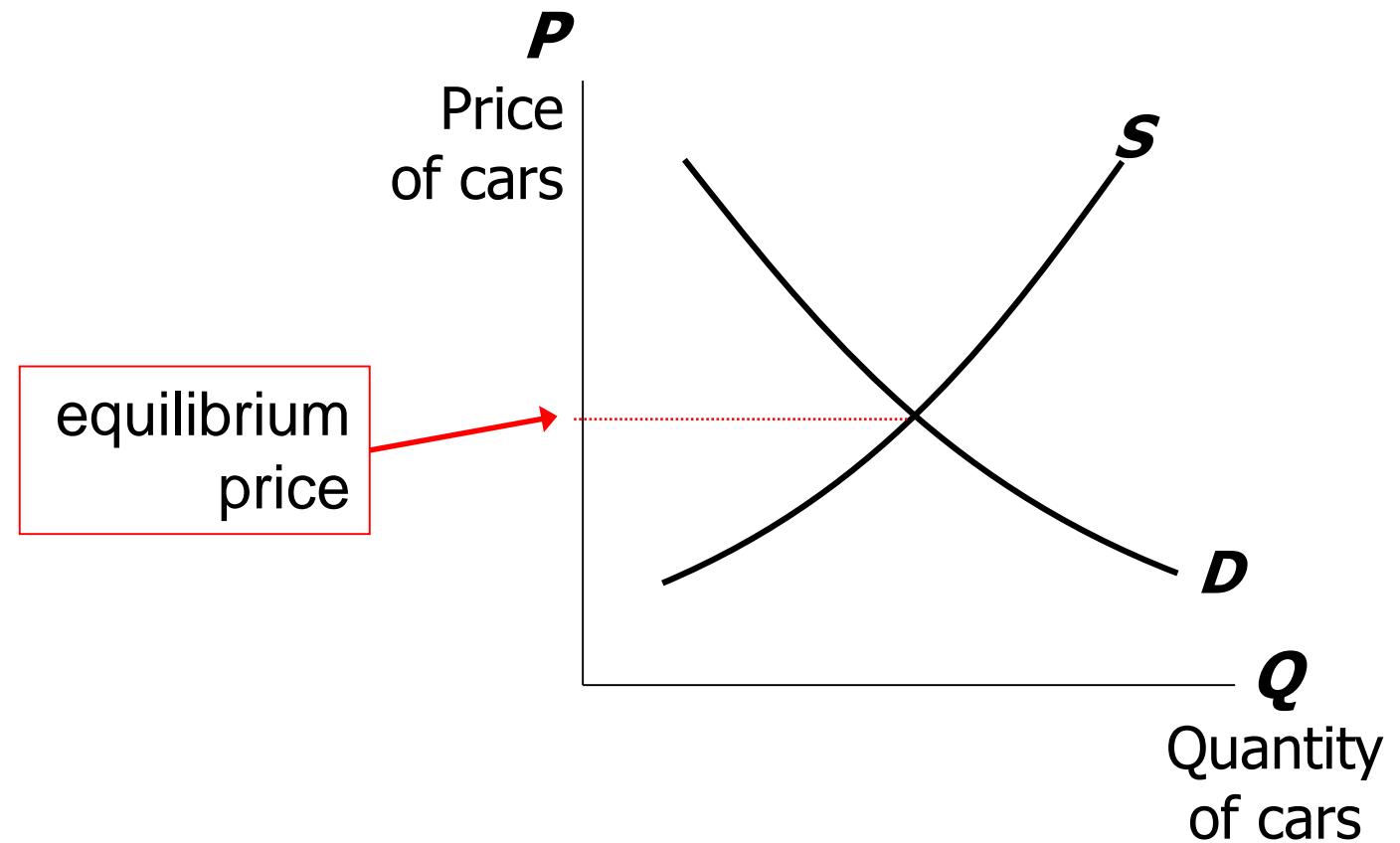
Value is measured by the price

Preliminaries: Market Economy

Value is measured by the price

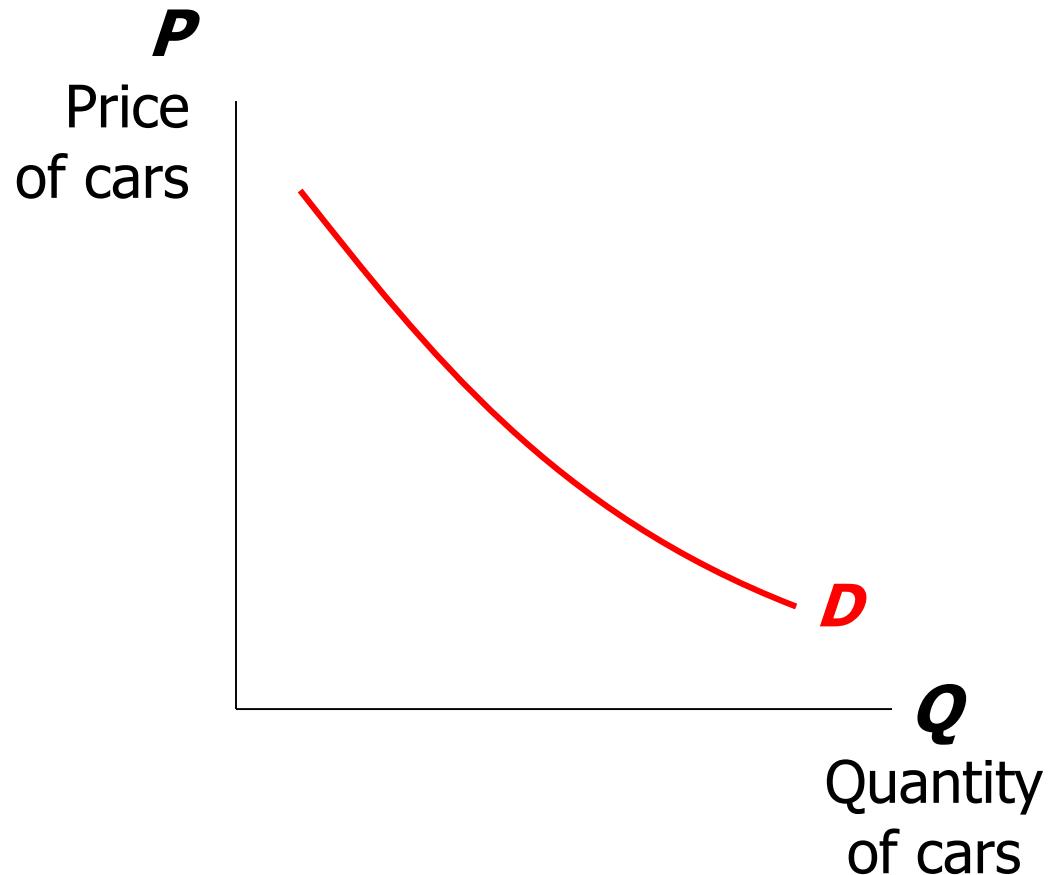
and

the price is determined by
Demand & Supply



Preliminaries: Demand

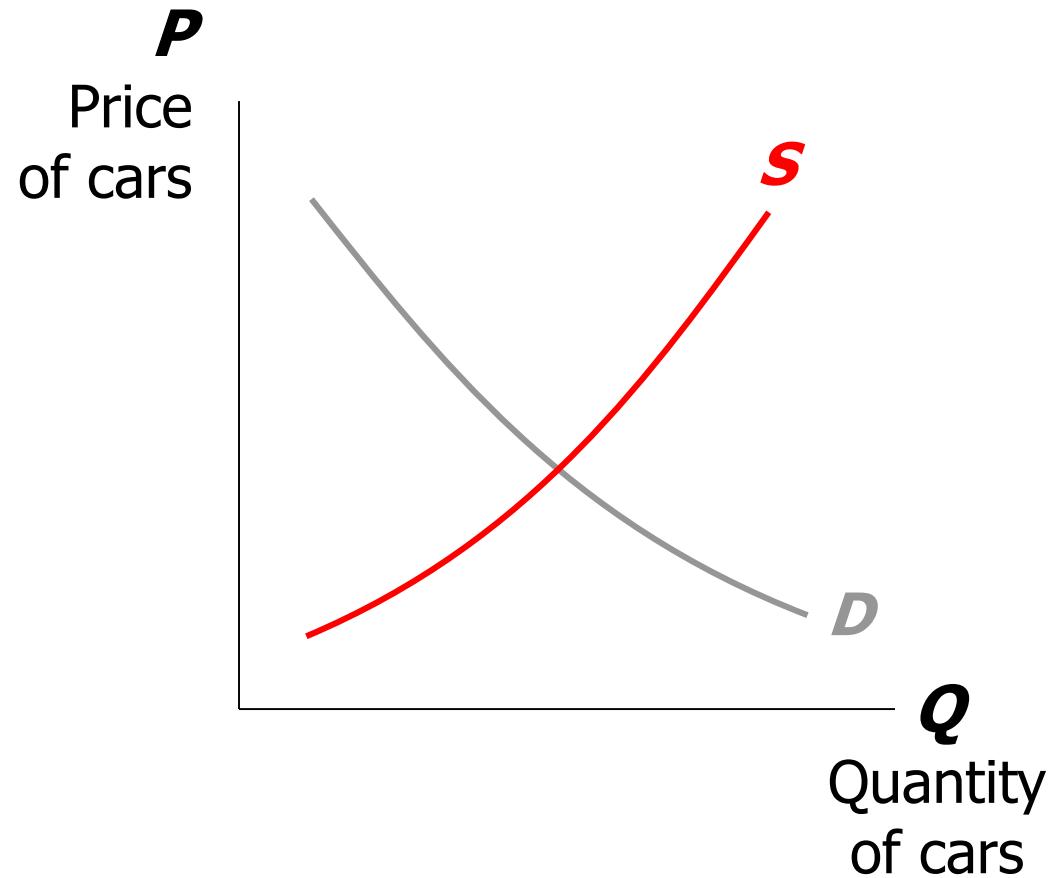
The demand curve: what would be the demand, given the price?



Preliminaries: Supply

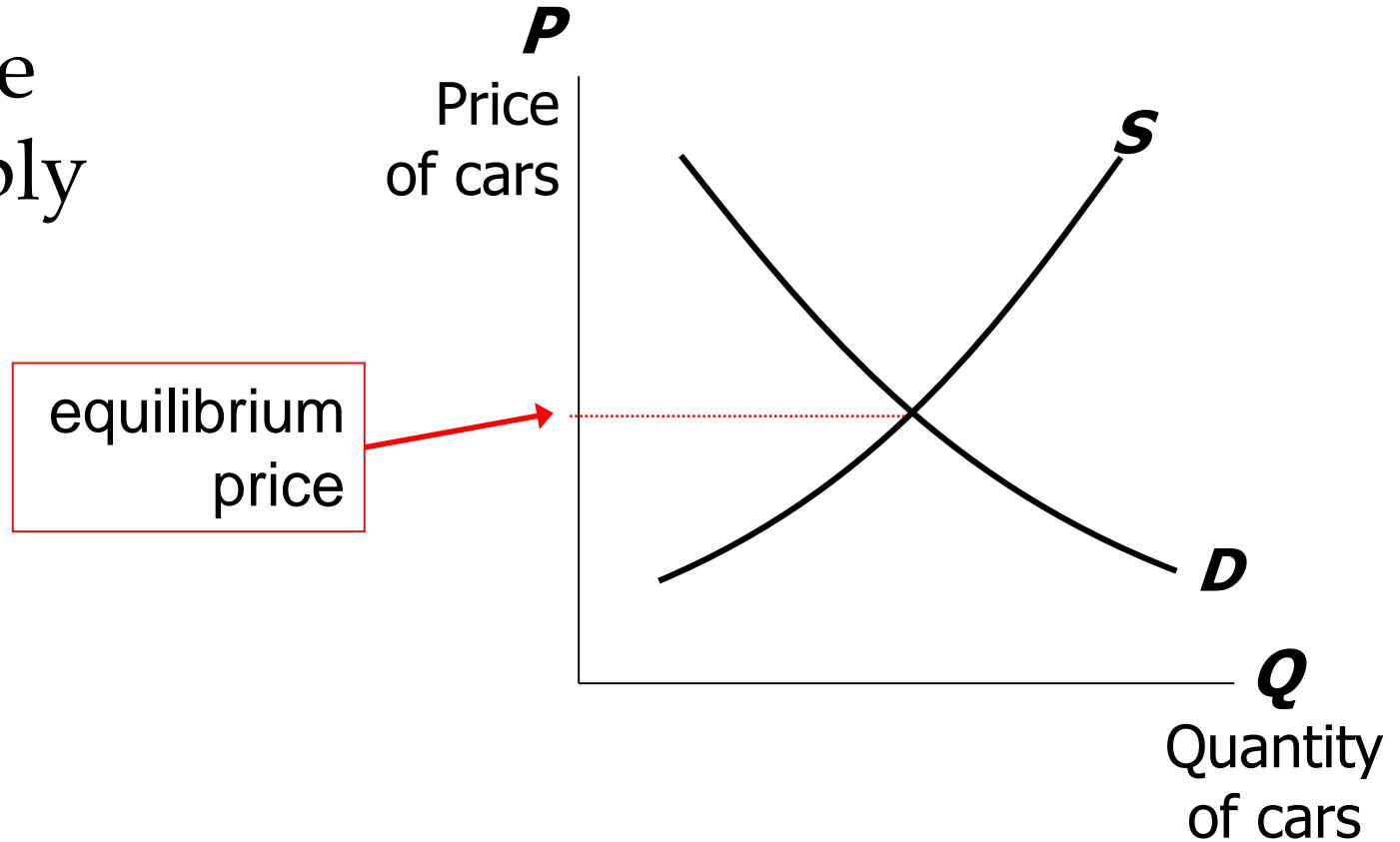
The supply curve: what would be the supply, given the price?

How many cars would you sell at this price?



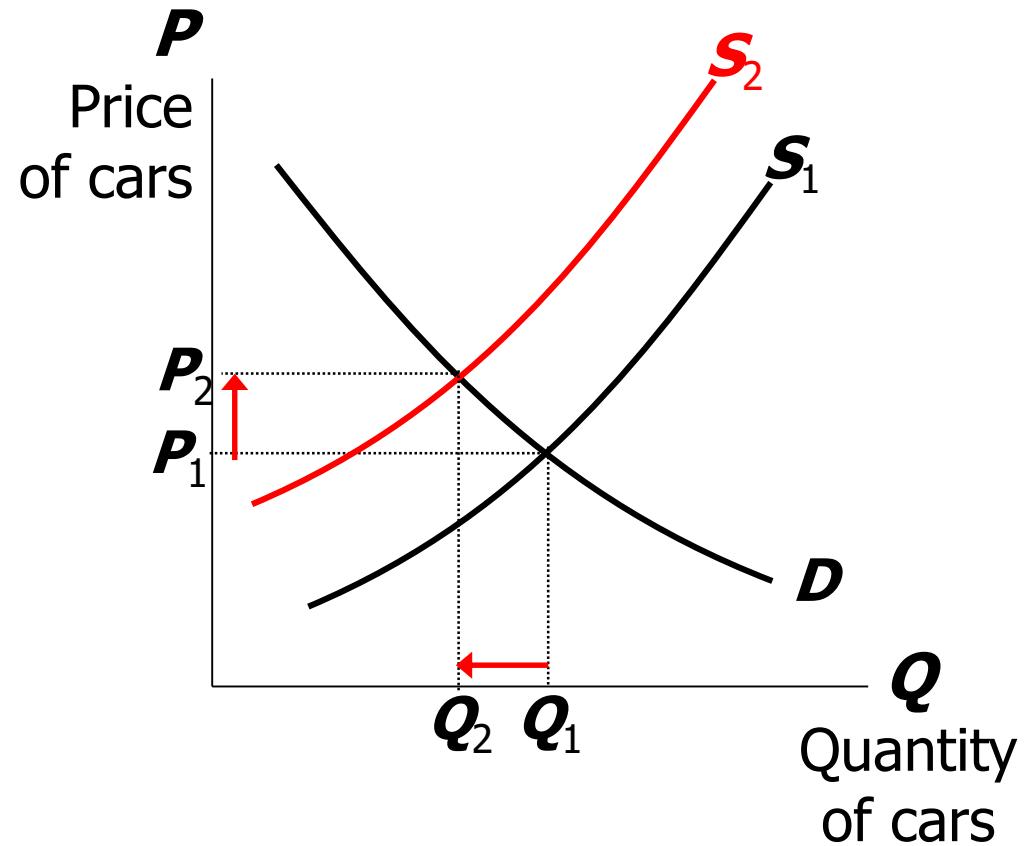
Preliminaries: Why does the price change?

Anything that will affect the price has to come from either the demand or the supply



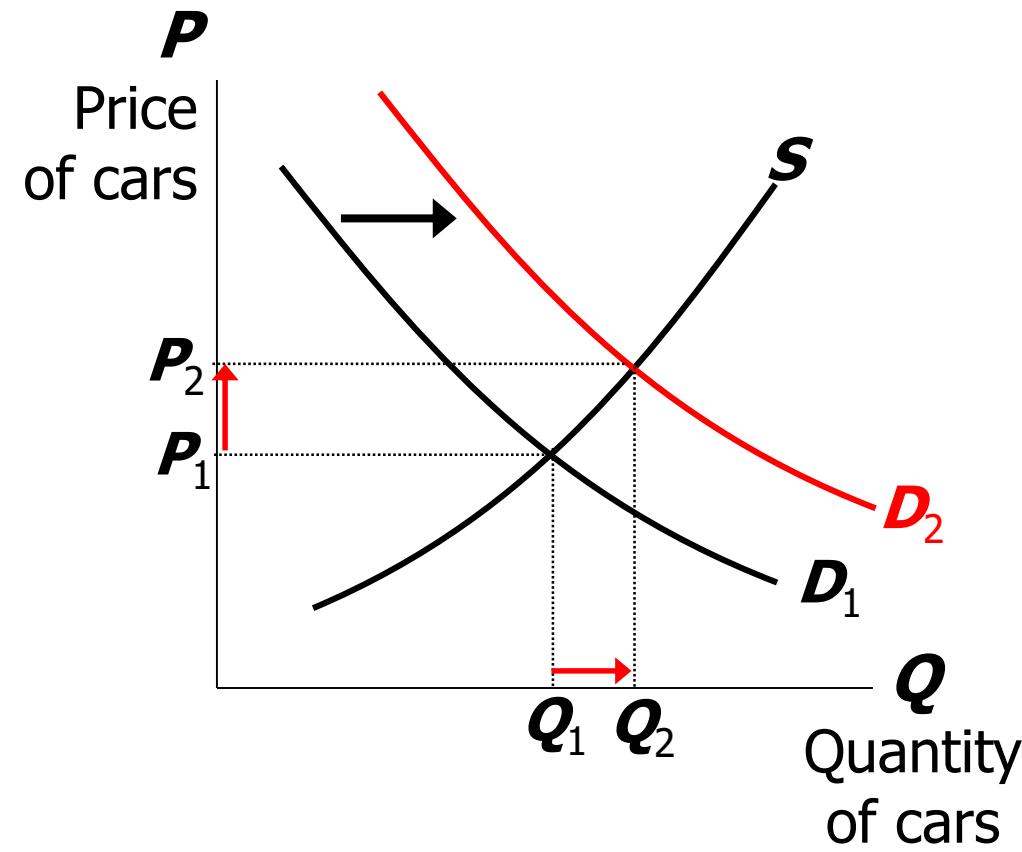
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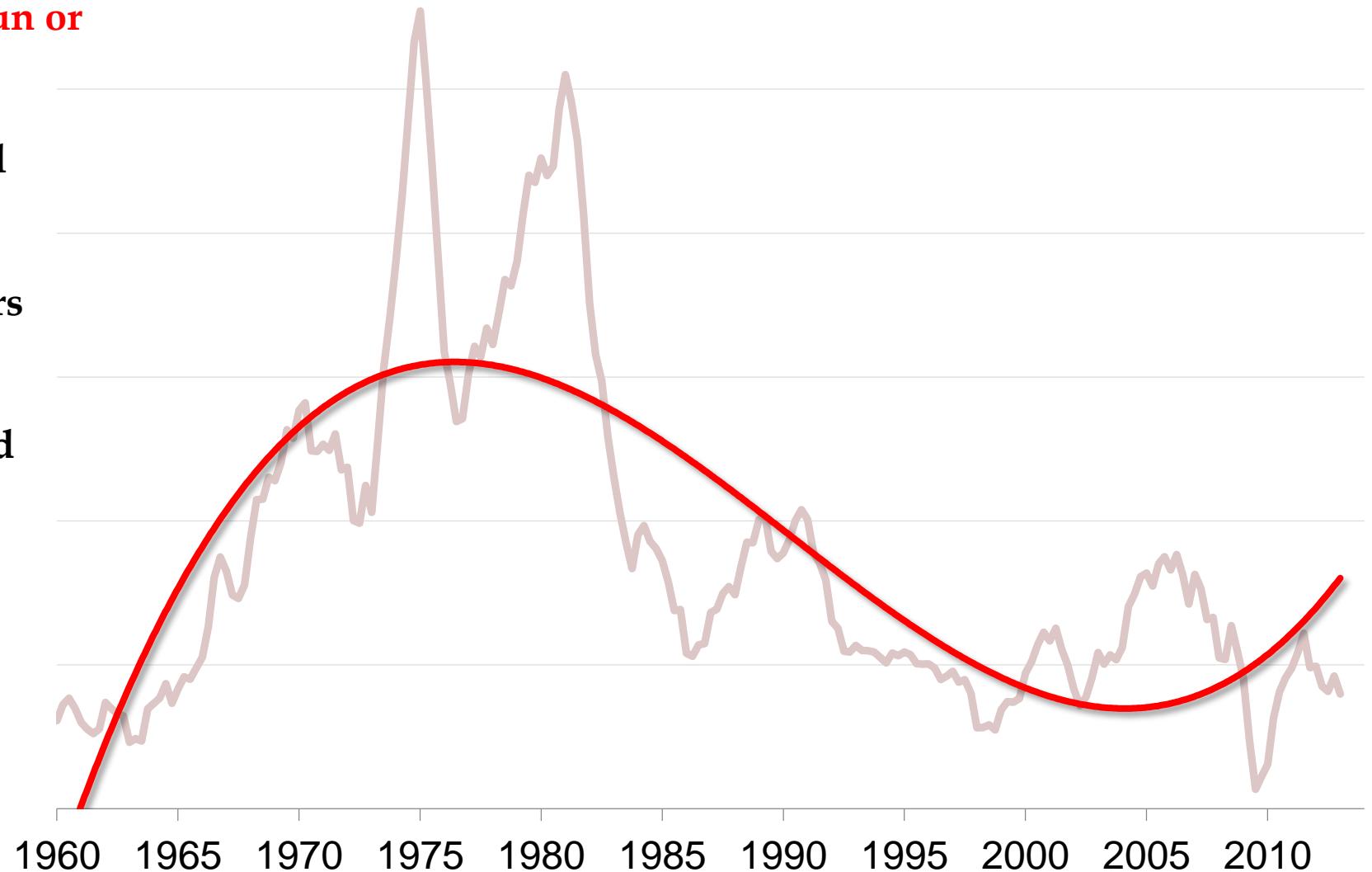
Preliminaries: Time Horizon

Are we talking about the short-run or the long-run?

Answers for many questions will depend on the horizon.

It is common that different factors are at work at different horizons.

I.e. capacity constraints, price and wage stickiness in the short-run.



Banking System

Modern Banka

Banka (bank) kelimesi İtalyanca “banca” kelimesinden gelir, ki o da bank (bench) kelimesinden gelir.

Bankrupt kelimesi de “banco rotta” (broken bench) demektir.

Iflas eden bankacının bankı kırılmış.



Modern Banka

Harita Floransa civarındaki bankaları ve yolculuk yapılırken karşılaşılacak riskleri göstermekte.

Hırsızlardan ve korsanlardan korunmak için “bank note”lar kullanılmakta idi.



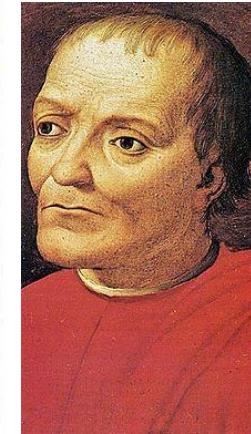
"Nautical Map" by Francesco de Cesanis, 1421

Modern Banka

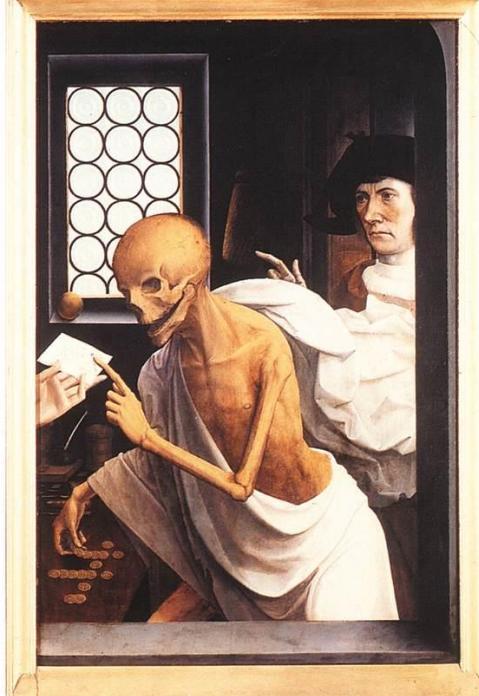
Halen ayakta olan en eski banka **Banca Monte dei Paschi di Siena** (1472)



Bilinen en eski bankalardan biri **Medici Bank** (1397)



Modern Banka



"Death and the Miser" by Jan Provost

Notta yazan: "Bunun sana gittigin yerde faydası olmayacak."

Memento mori ("remember that you have to die")



"Death and the Miser" by Hieronymus Bosch

Modern Banka

Bankacılığın ve banka regulasyonun tarihi çok daha eskilere gider.

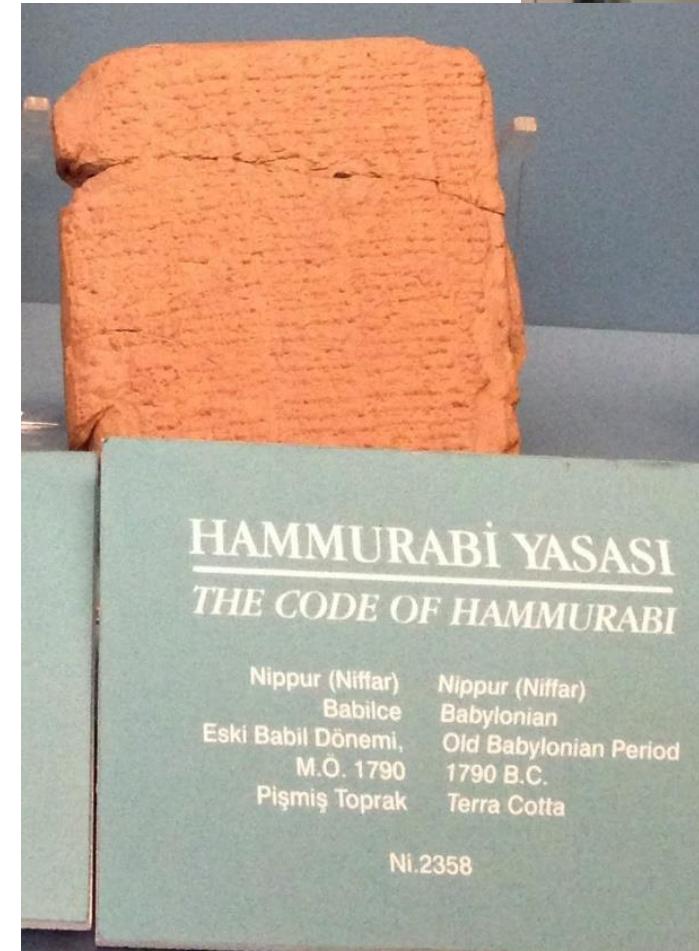
Hammurabi kanunlarında (MÖ 1700) istenebilecek faiz sınırlandırılmıştır.

88 no'lu kanun:

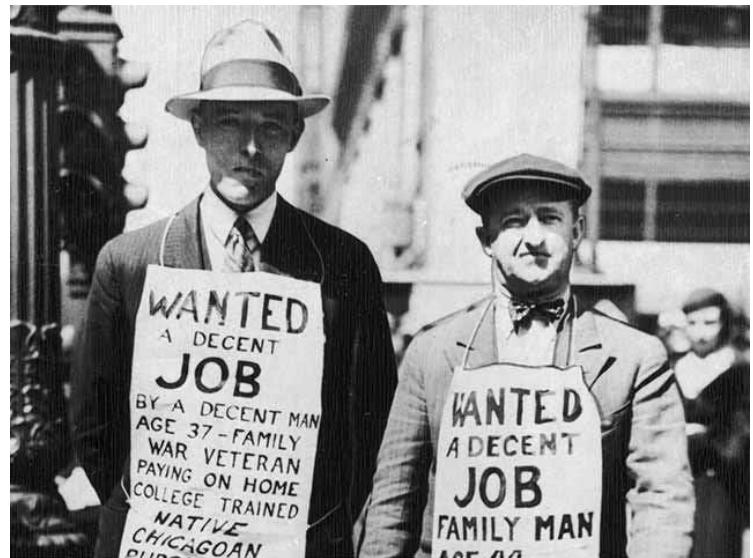
"If a merchant has given corn on loan, he may take 100 SILA of corn as interest on 1 GUR; if he has given silver on loan, he may take 1/6 shekel 6 grains as interest on 1 shekel of silver."

Faiz yuzde 20'yi geçemez diye belirtilmiş.

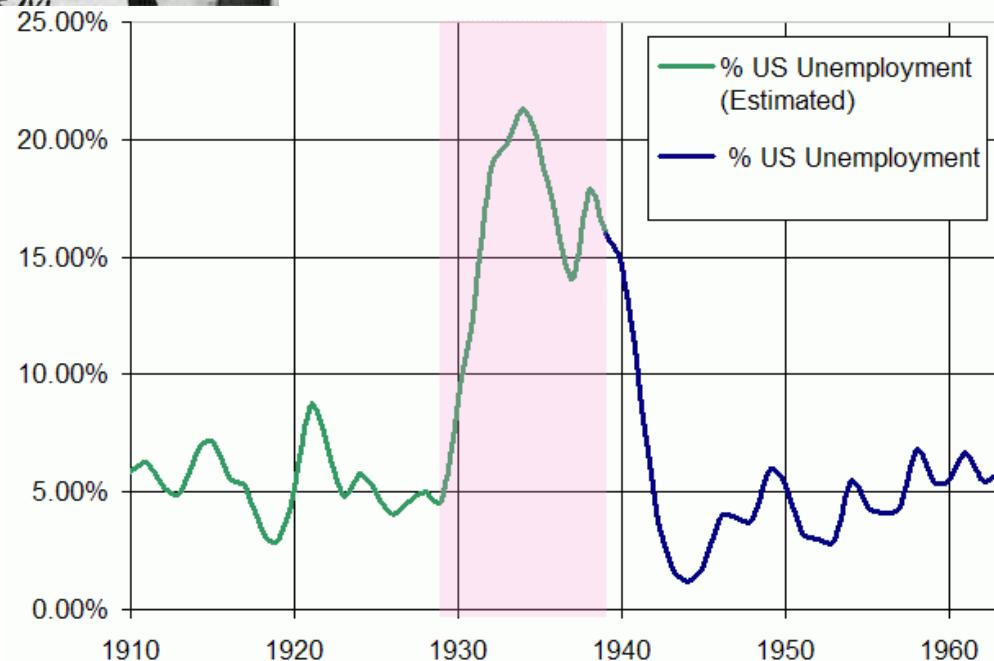
Geçmenin cezası ise anaparadan mahrum bırakılmak.



Modern Banka



Büyük buhran döneminde Amerika'da 9000 civarı banka kapanmıştır.



Memlekette Bankacılık

1840 Kaime'nin basılması (İlk kağıt para)

1847 İlk bankanın kurulması (İstanbul Bankası)

1856 Osmanlı Bankası

1863 Menafi sandıklarının kurulması (Pirot/Şehirköylü,
Sırbistan)

1875 Osmanlı imparatorluğunun borçlarını ödeyememesi

1888 Ziraat Bankasının kurulması (Menafi Sandıkları ZB
subesi olur)

Özel bankalar:

1944 Yapı ve Kredi Bankası

1946 Garanti Bankası

1948 Akbank

1955 Pamukbank

1950 Türkiye Sınaî ve Kalkınma Bankası (İlk Kalkınma
Bankası)



Money & Money creation in the modern banking system

We will answer Q1 and Q2 (partially)

Q1: Is Bitcoin money?

Q2: Why is the price of gold increasing (or not)?

Money: Definition

Money is the stock of assets that can be readily used to make transactions.



Money: Functions

- *medium of exchange*
we use it to buy stuff
- *store of value*
transfers purchasing power from the present to the future
- *unit of account*
the common unit by which everyone measures prices and values

Money: Types

1. Fiat money

- has no intrinsic value
- example: the paper currency we use

2. Commodity money

- has intrinsic value
- examples:
 - gold coins,
 - cigarettes in P.O.W. camps and in film *The Shawshank Redemption*

Q1: Is Bitcoin money?

Q1-a : Value of Bitcoin?

Where does Bitcoin's value come from?

Q2: Why is the price of gold increasing
(or not)?

Which gold price?

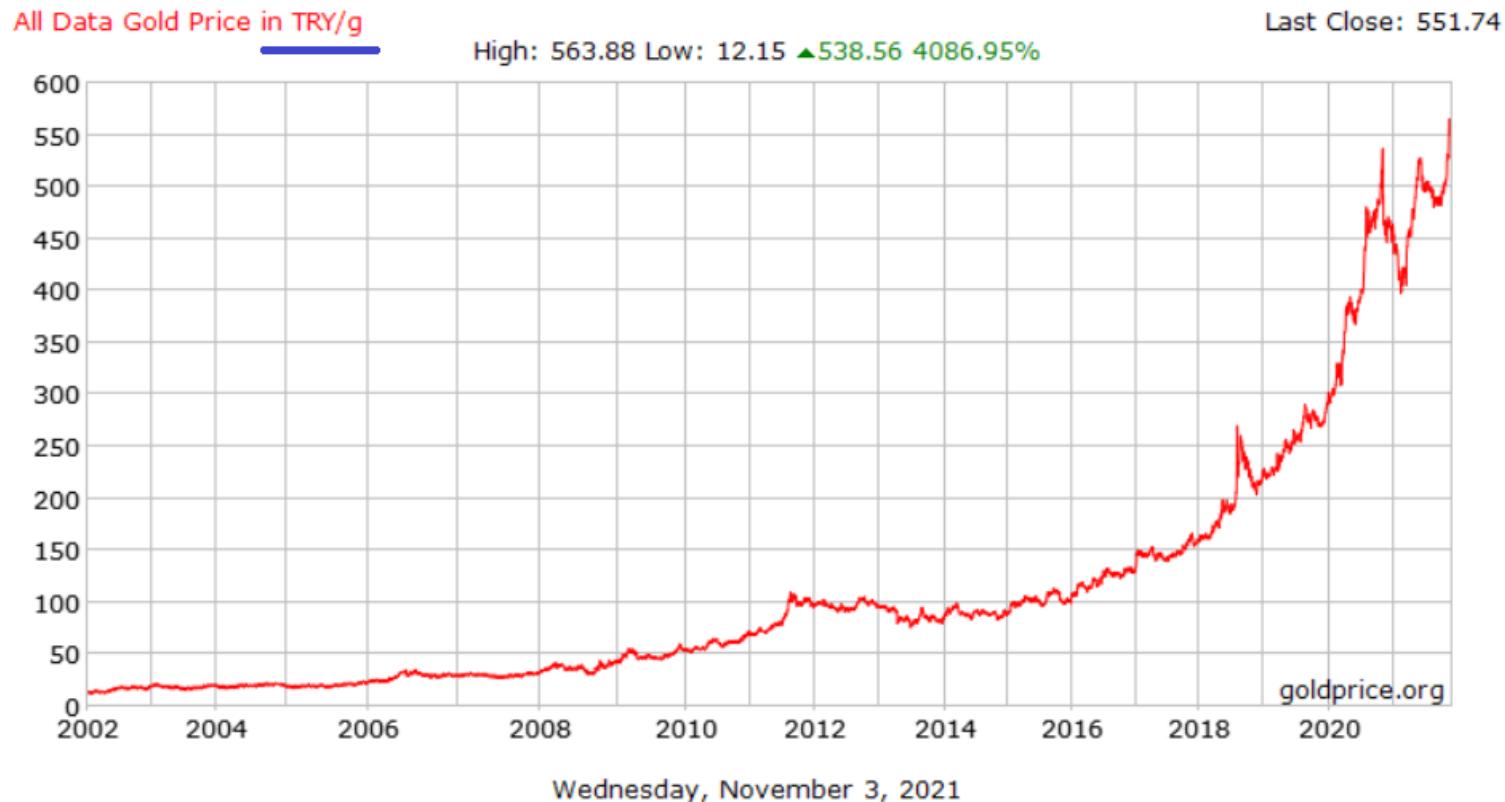
Q2: Why is the price of gold increasing (or not)?

Which gold price? This is for an ounce (28.3 gr), and in USD



Q2: Why is the price of gold increasing (or not)?

Which gold price? This is for a gram, and in TRY (Turkish Lira)



Q2: Why is the price of gold increasing (or not)?



How Will Gold Price React To The Robust US October Jobs Number?

The main factor supporting gold price as of now has been dollar index which due to ample liquidity into the global system as well as near...

3 days ago



Altında yönü ABD enflasyonu belirleyecek

Altın fiyatları, son dört günü kazançla kapattıktan sonra yatırımcıların ABD enflasyon verisine odaklanmasıyla sakin bir seyir izliyor. Altın, enflasyon artsa dahi merkez bankalarının yakın zamanda faiz artırmayacağına dair beklentilerle yükselmiştir. Enflasyonun Ekim ayında beklentileri aşması durumunda faiz artırımlarının beklenenden erken başlayacağına dair endişeler yeniden görünür olurken, bu durumun altın fiyatları üzerinde uzun vadede baskı yaratabileceği öngörülüyor.

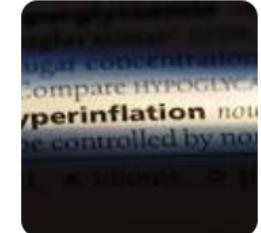
Q2: Why is the price of gold increasing?

Recent moves in USD/oz

FXS FXStreet

Gold Price Forecast: XAU/USD rallied due to low labor force participation – TDS

Gold Price Forecast: XAU/USD rallied due to low labor force participation – TDS. NEWS | 11/8/2021 1:26:41 AM GMT | By Dhwani Mehta.



Money: Types

1. Fiat money

- has **no intrinsic value**
- example: the paper currency we use

Some commonly-held beliefs about fiat/paper money

- backed by gold reserves
- backed by fiscal capacity, military capacity, etc.
- can be printed at unlimited amounts

Important: We will see that money and the physical money (banknotes+coins) are not the same things.

The money supply and monetary policy definitions

- The **money supply** is the quantity of money available in the economy.
- **Monetary policy** is the control over the **money supply**.

The central bank and monetary control

- Monetary policy is conducted by a country's **central bank**.
- The U.S.' central bank is called the **Federal Reserve** ("the Fed").



*The Federal Reserve Building
Washington, DC*

Money supply measures, April 2013

symbol	assets included	amount (\$ billions)
C	Currency	1,108
M1	C + <u>demand deposits</u> , travelers' checks, other checkable deposits	2,523
M2	M1 + small time deposits, savings deposits, money market mutual funds, money market deposit accounts	10,525

Money supply measures, in Turkey

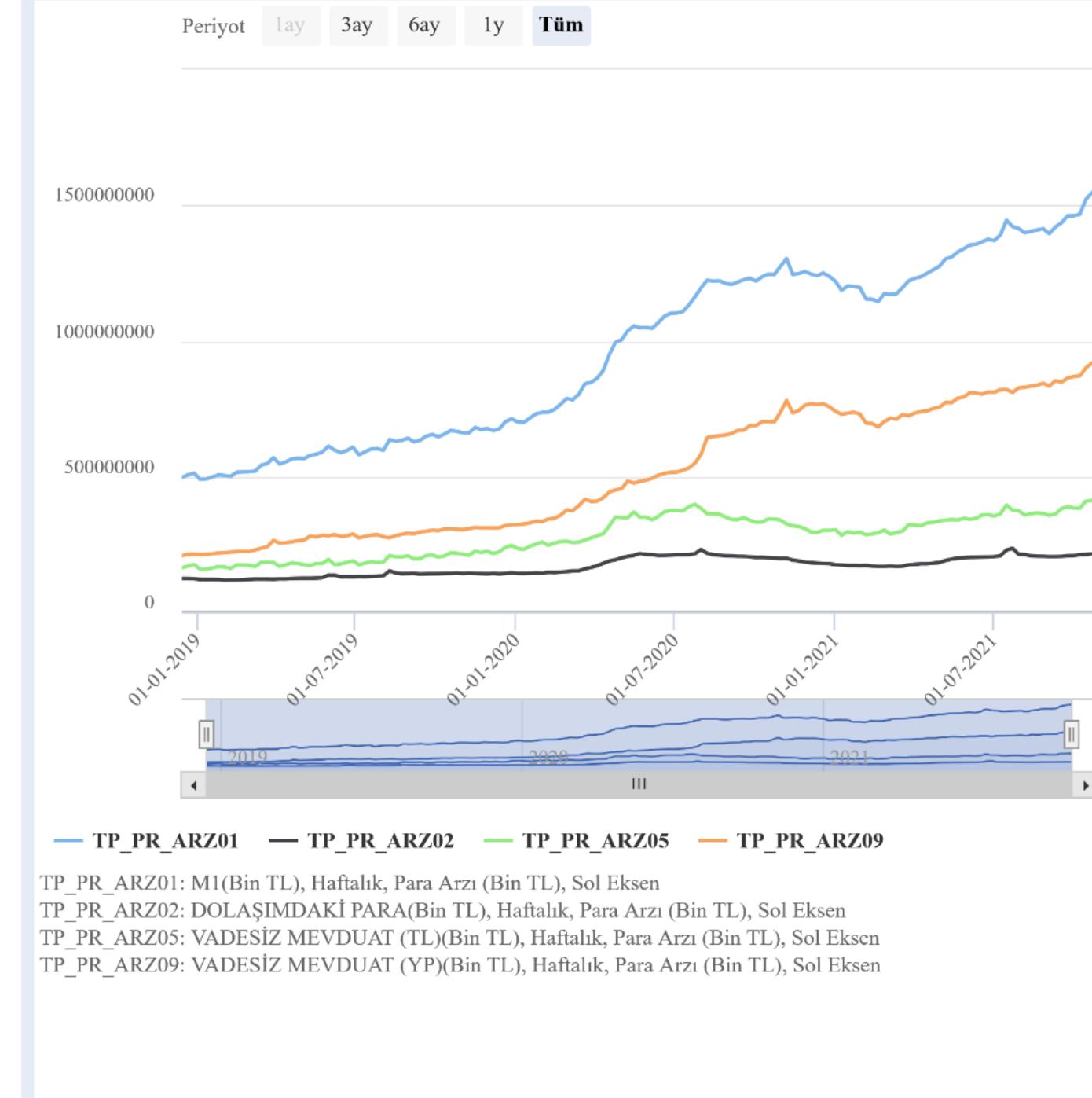
From top to bottom:

M1

Demand Deposits (EUR/USD/JPY/etc
denominated)

Demand Deposits (TRY denominated)

Monetary Base



Money supply measures, in Turkey

From top to bottom:

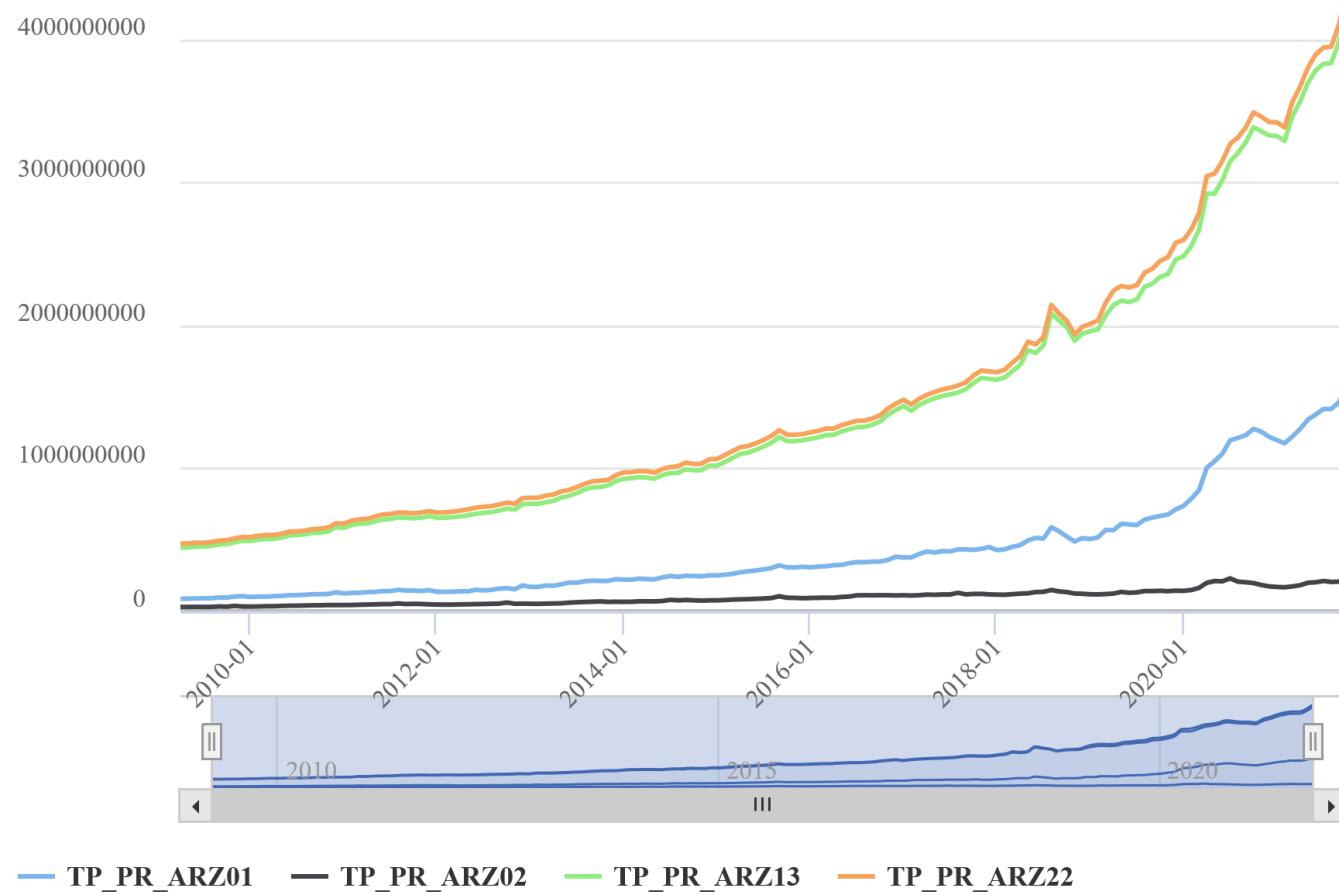
M3

M2

M1

Monetary Base

Periyot 1ay 3ay 6ay 1y Tüm



TP_PR_ARZ01: M1(Bin TL), Haftalık, Para Arzı (Bin TL), Sol Eksen

TP_PR_ARZ02: DOLAŞIMDAKİ PARA(Bin TL), Haftalık, Para Arzı (Bin TL), Sol Eksen

TP_PR_ARZ13: M2(Bin TL), Haftalık, Para Arzı (Bin TL), Sol Eksen

TP_PR_ARZ22: M3(Bin TL), Haftalık, Para Arzı (Bin TL), Sol Eksen

Money supply measures, in Turkey

Haftalık, Para Arzı (Bin TL)(Haftalık) 

Gözlem Formül Ekle

Orijinal Gözlem 1 seçildi 

<input type="checkbox"/>	Seri Adı
<input checked="" type="checkbox"/>	M1(Bin TL)
<input checked="" type="checkbox"/>	DOLAŞIMDAKİ PARA(Bin TL)
<input type="checkbox"/>	Dolaşma Çıkan Banknot + Madeni Para(Bin TL)
<input type="checkbox"/>	Banka Kasaları (-)(Bin TL)
<input type="checkbox"/>	VADESİZ MEVDUAT (TL)(Bin TL)
<input type="checkbox"/>	Mevduat Bankaları(Bin TL)
<input type="checkbox"/>	Katılım Bankaları(Bin TL)
<input type="checkbox"/>	TCMB(Bin TL)
<input type="checkbox"/>	VADESİZ MEVDUAT (YP)(Bin TL)
<input type="checkbox"/>	Mevduat Bankaları(Bin TL)
<input type="checkbox"/>	Katılım Bankaları(Bin TL)
<input type="checkbox"/>	TCMB(Bin TL)
<input checked="" type="checkbox"/>	M2(Bin TL)

Note TL and YP (yabancı para, foreign currency)

<input checked="" type="checkbox"/>	M2(Bin TL)
<input type="checkbox"/>	VADELİ MEVDUAT (TL)(Bin TL)
<input type="checkbox"/>	Mevduat Bankaları(Bin TL)
<input type="checkbox"/>	Katılım Bankaları(Bin TL)
<input type="checkbox"/>	TCMB(Bin TL)
<input type="checkbox"/>	VADELİ MEVDUAT (YP)(Bin TL)
<input type="checkbox"/>	Mevduat Bankaları(Bin TL)
<input type="checkbox"/>	Katılım Bankaları(Bin TL)
<input type="checkbox"/>	TCMB(Bin TL)
<input checked="" type="checkbox"/>	M3(Bin TL)
<input type="checkbox"/>	REPO(Bin TL)
<input type="checkbox"/>	PARA PİYASASI FONLARI (B TİPİ LİKİT FONLAR)(Bin TL)
<input type="checkbox"/>	İHRAÇ EDİLEN MENKUL DEĞERLER(Bin TL)

Banks' role in the monetary system

- The money supply equals currency plus demand (checking account) **deposits**:

$$M = C + D$$

- Since the money supply includes demand **deposits**, the **banking system** plays an important role.

Fractional-reserve banking

- Suppose banks hold 20% of deposits in reserve, making loans with the rest.
- Firstbank will make \$800 in loans.

FIRSTBANK'S balance sheet	
Assets	Liabilities
reserves \$200	deposits \$1,000
loans \$800	

The money supply now equals \$1,800:

- Depositor has \$1,000 in demand deposits.
- Borrower holds \$800 in currency.

Fractional-reserve banking

- Suppose the borrower deposits the \$800 in Secondbank.
- Initially, Secondbank's balance sheet is:

SECONDBANK'S balance sheet	
Assets	Liabilities
reserves \$160	deposits \$800
loans \$640	

- Secondbank will loan 80% of this deposit.

Fractional-reserve banking

- If this \$640 is eventually deposited in Thirdbank,
- then Thirdbank will keep 20% of it in reserve and loan the rest out:

THIRDBANK'S balance sheet	
Assets	Liabilities
reserves \$128	deposits \$640
loans \$512	

Finding the total amount of money:

	Original deposit	= \$1000
+	Firstbank lending	= \$ 800
+	Secondbank lending	= \$ 640
+	Thirdbank lending	= \$ 512
+	other lending...	

Total money supply is not \$1,000

but $M = \$5,000$

Money creation in the banking system

LESSON: in a fractional-reserve banking system, banks create money.

A fractional-reserve banking system creates money, but it doesn't create wealth:

Bank loans give borrowers some new money and an equal amount of new debt.

Money & Inflation & Interest rates

Consumer Price Index (CPI)

- A measure of the overall level of prices
- the Bureau of Labor Statistics (BLS) & TUIK
- Uses:
 - tracks changes in the **typical** household's cost of living
 - adjusts many contracts for inflation
 - allows comparisons of dollar amounts over time

http://www3.tcmb.gov.tr/enflasyoncalc/enflasyon_hesaplayici.html

How is CPI constructed?

1. Survey consumers to determine composition of the typical consumer's "basket" of goods (g&s)
2. Every month, collect data on prices of all items in the basket; compute cost of basket
3. CPI in any month equals

$$100 \times \frac{\text{Cost of basket in that month}}{\text{Cost of basket in base period}}$$

NOW YOU TRY

Compute the CPI

Basket: 20 pizzas, 10 compact discs

prices:

	pizza	CDs
2012	\$10	\$15
2013	11	15
2014	12	16
2015	13	15

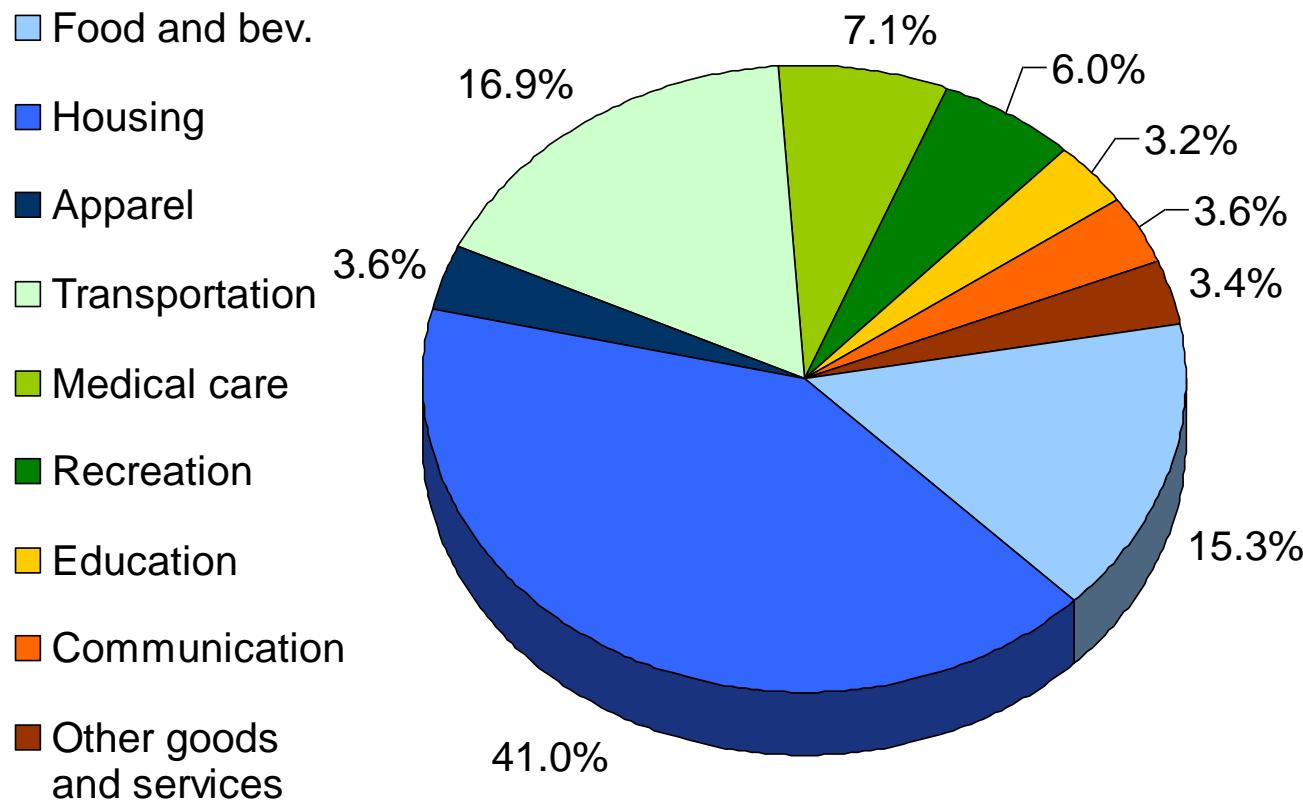
For each year, compute

- the cost of the basket
- the CPI (use 2012 as the base year)
- the inflation rate from the preceding year

NOW YOU TRY Answers

	Cost of basket	CPI	Inflation rate
2012	\$350	100.0	<i>n.a.</i>
2013	370	105.7	5.7%
2014	400	114.3	8.1%
2015	410	117.1	2.5%

The composition of the CPI's “basket” - US



The composition of the CPI's “basket” - TR

Food and non-alcoholic beverages	Transport	Housing, water, electricity, gas and other fuels	Furnishings, household equipment, routine maintenance of the house	Hotels, cafes and restaurants	Clothing and footwear
25.94	15.49	15.36	8.64	5.91	5.87
Alcoholic beverages and tobacco	Miscellaneous goods and services	Communications	Health	Recreation and culture	Education
4.88	4.73	4.64	3.25	3.01	2.28

Compute your own inflation

By plugging your own weight, i.e. the inflation of your consumption basket

Use the Excel file I provided

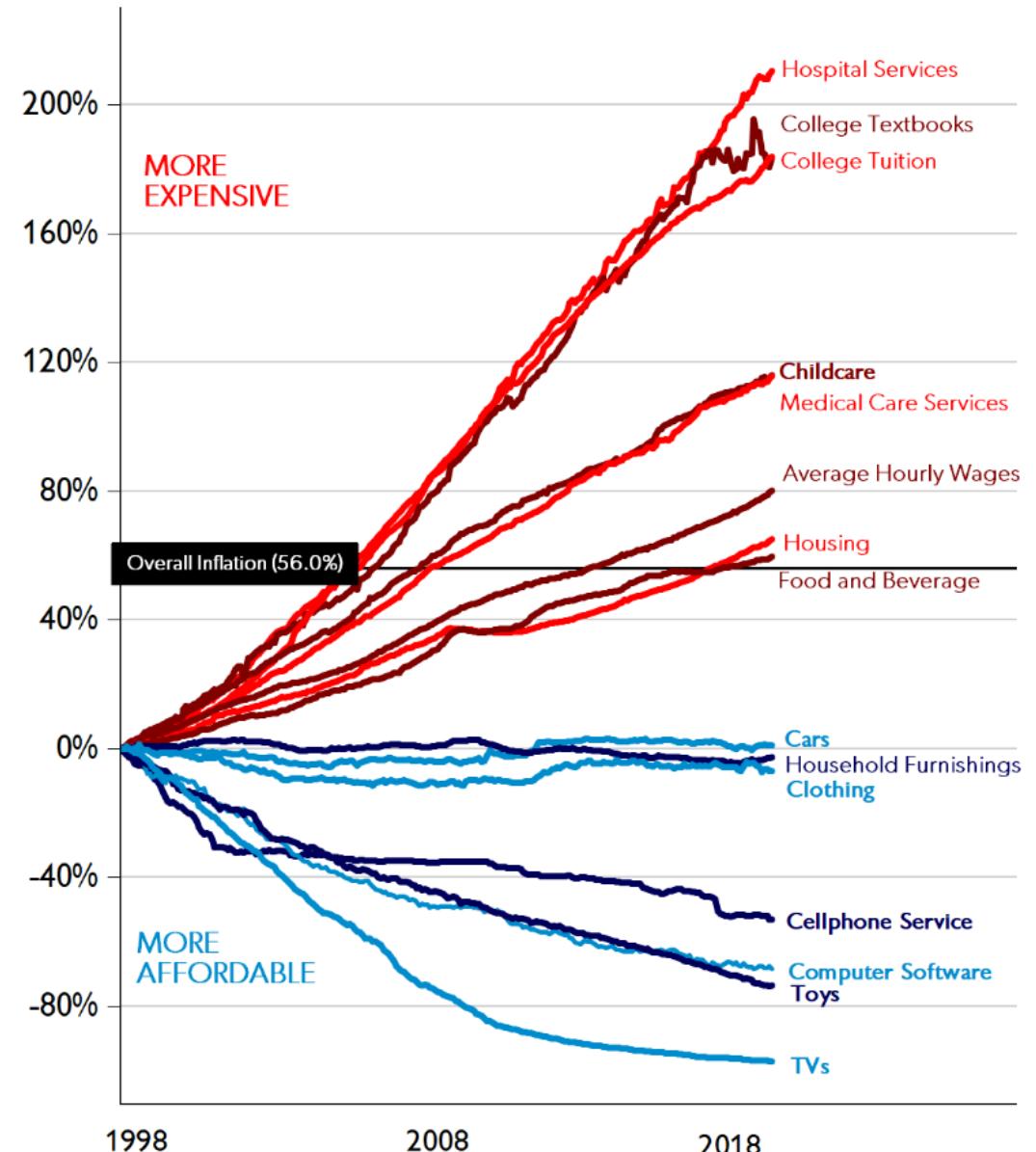
Oct-21

	Genel	Gıda ve alkolsüz içecekler	Alkollü içecekler ve tütün	Giyim ve ayakkabı	Konut, su, elektrik, gaz ve diğer yakıtlar	Mobilya, ev aletleri ve ev bakım hizmetleri	Sağlık	Ulaştırma	Haberleşme	Eğlence ve kültür	Eğitim	Lokanta ve oteller	Çeşitli mal ve hizmetler	
	General	Food and non-alcoholic beverages	Alcoholic beverages and tobacco	Clothing and footwear	Housing, water, electricity, gas and other fuels	Furnishing, household equipment, routine maintenance of the house	Health	Transport	Communications	Recreation and culture	Education	Hotels, cafes and restaurants	Miscellaneous goods and services	
official weights		100.00	25.94	4.88	5.87	15.36	8.64	3.25	15.49	4.64	3.01	2.28	5.91	4.73
insert your weights into this row, and make sure they sum to 100		100.00	0.00	5.00	7.00	17.00	6.00	2.00	17.00	33.00	2.00	1.00	7.00	3.00

US Inflation

Price Changes (January 1998 to December 2018)

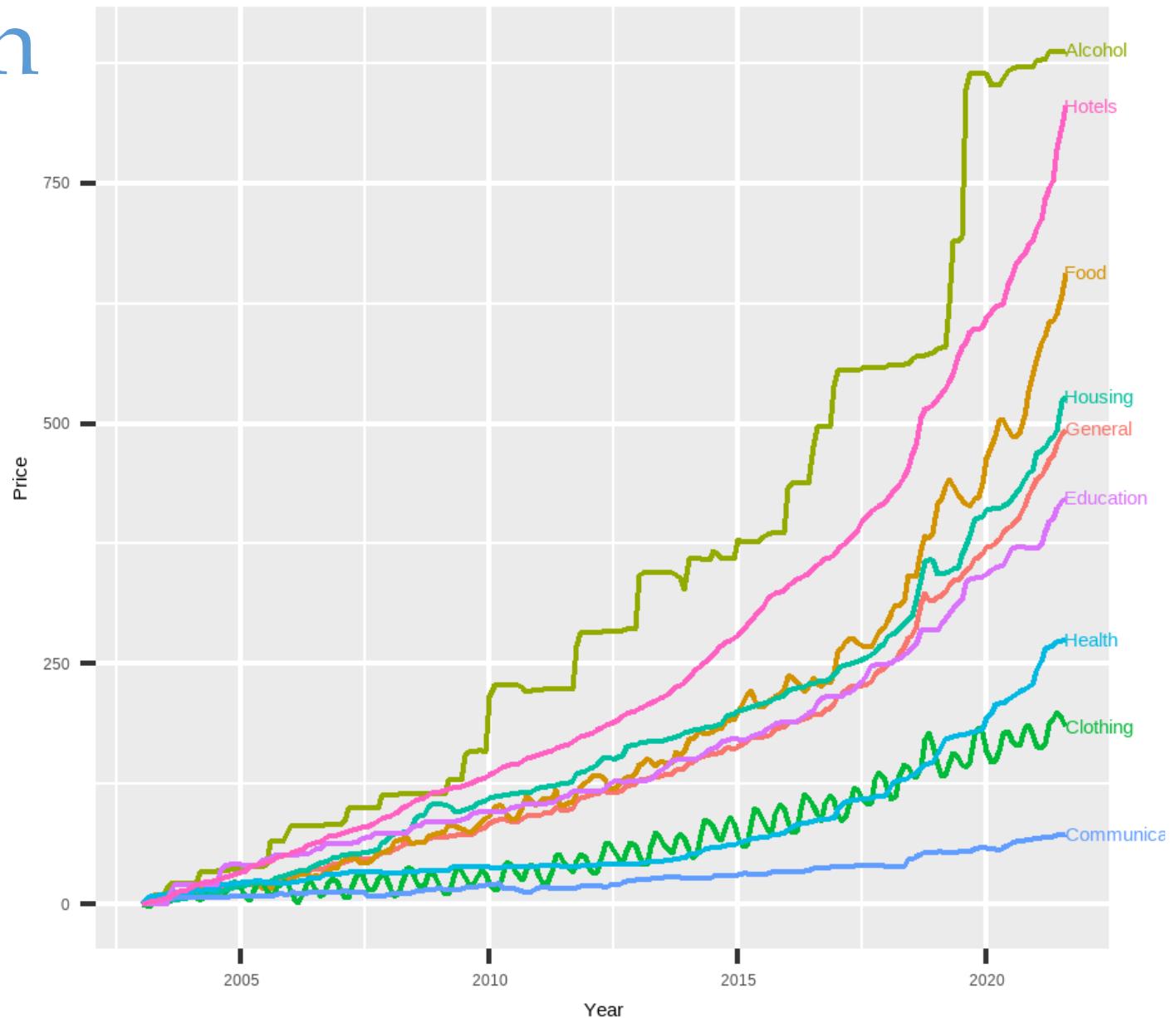
Selected US Consumer Goods and Services, Wages



Turkish Inflation

Price Changes

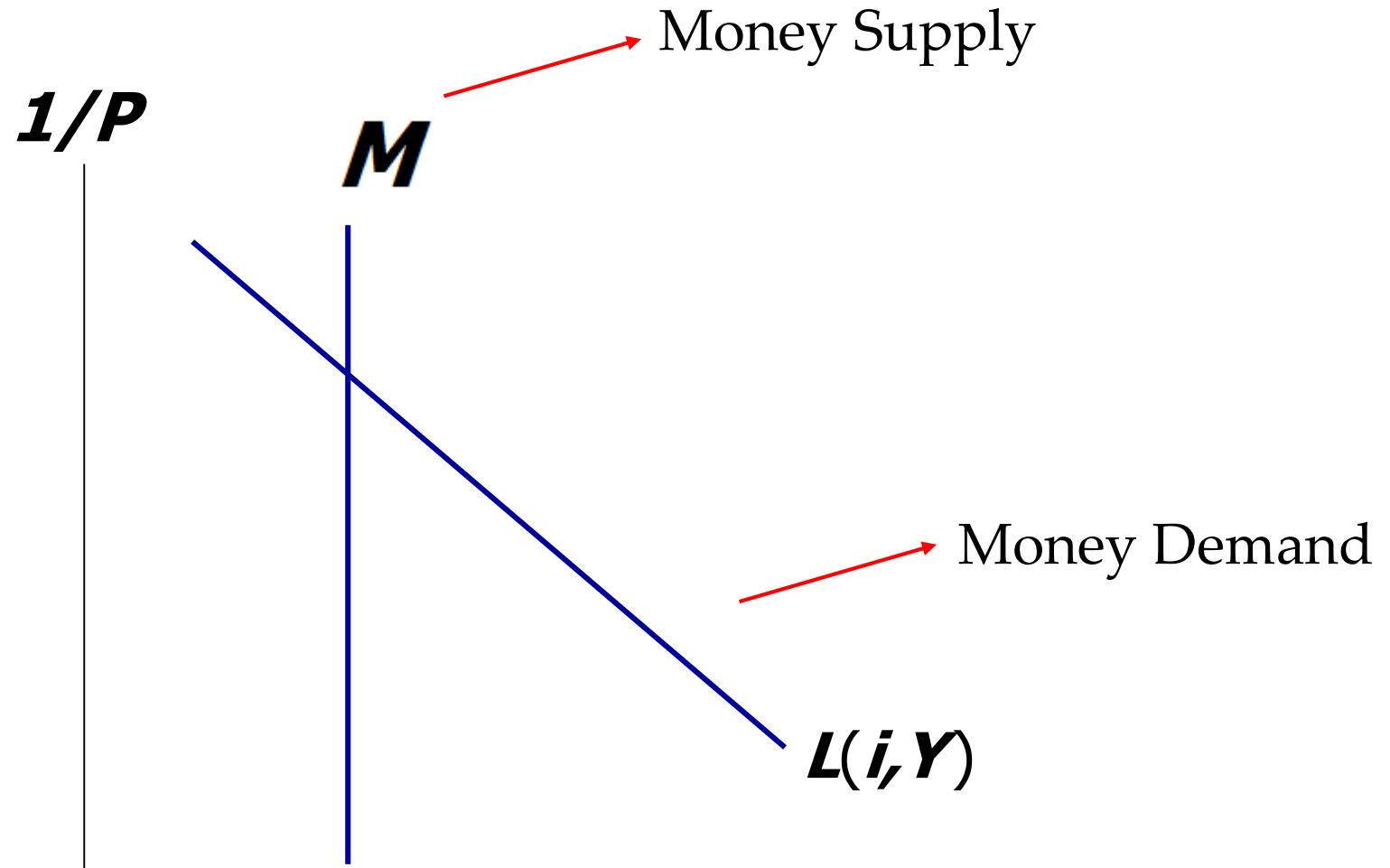
Drawn From CPI(2003 = 0) Data



Money Demand, Money Supply and Inflation

P: overall
price level
(CPI)

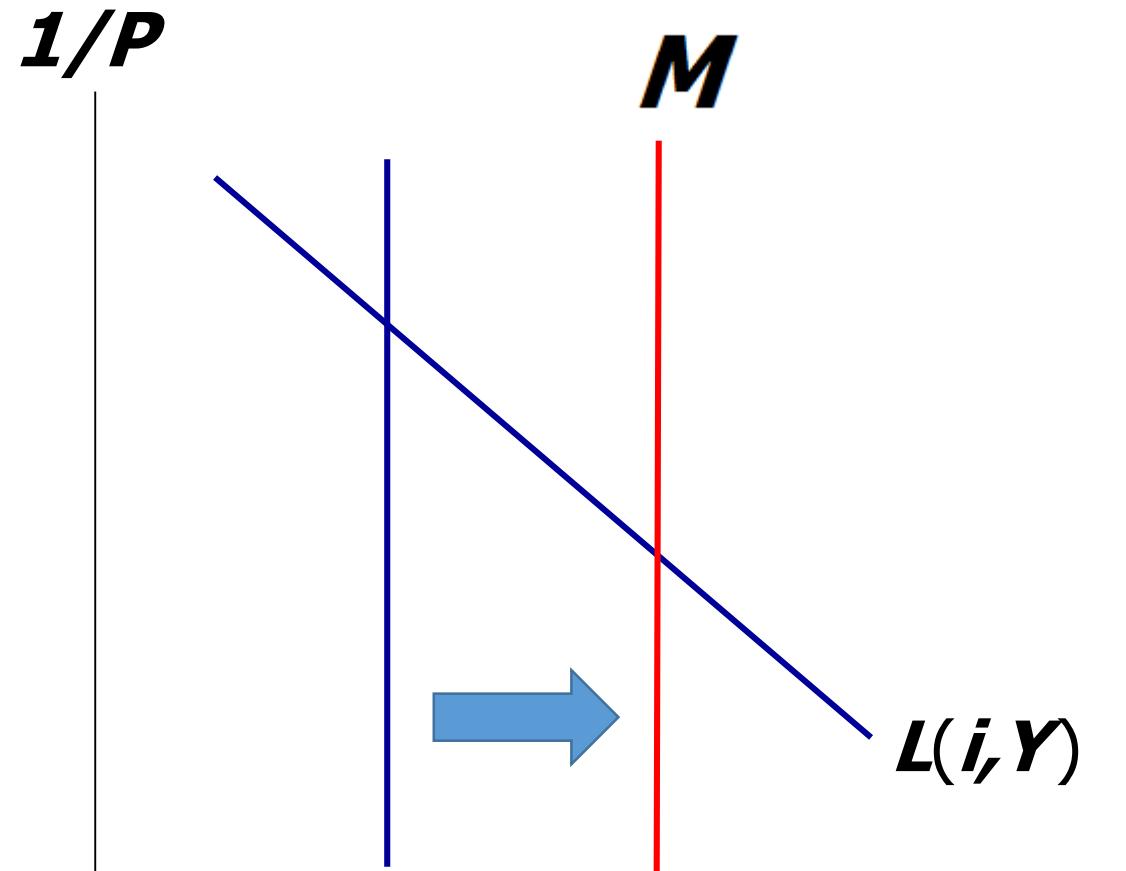
1/P : value of
money, i.e.
what can
you buy
with 1 TL



Money Demand, Money Supply and Inflation

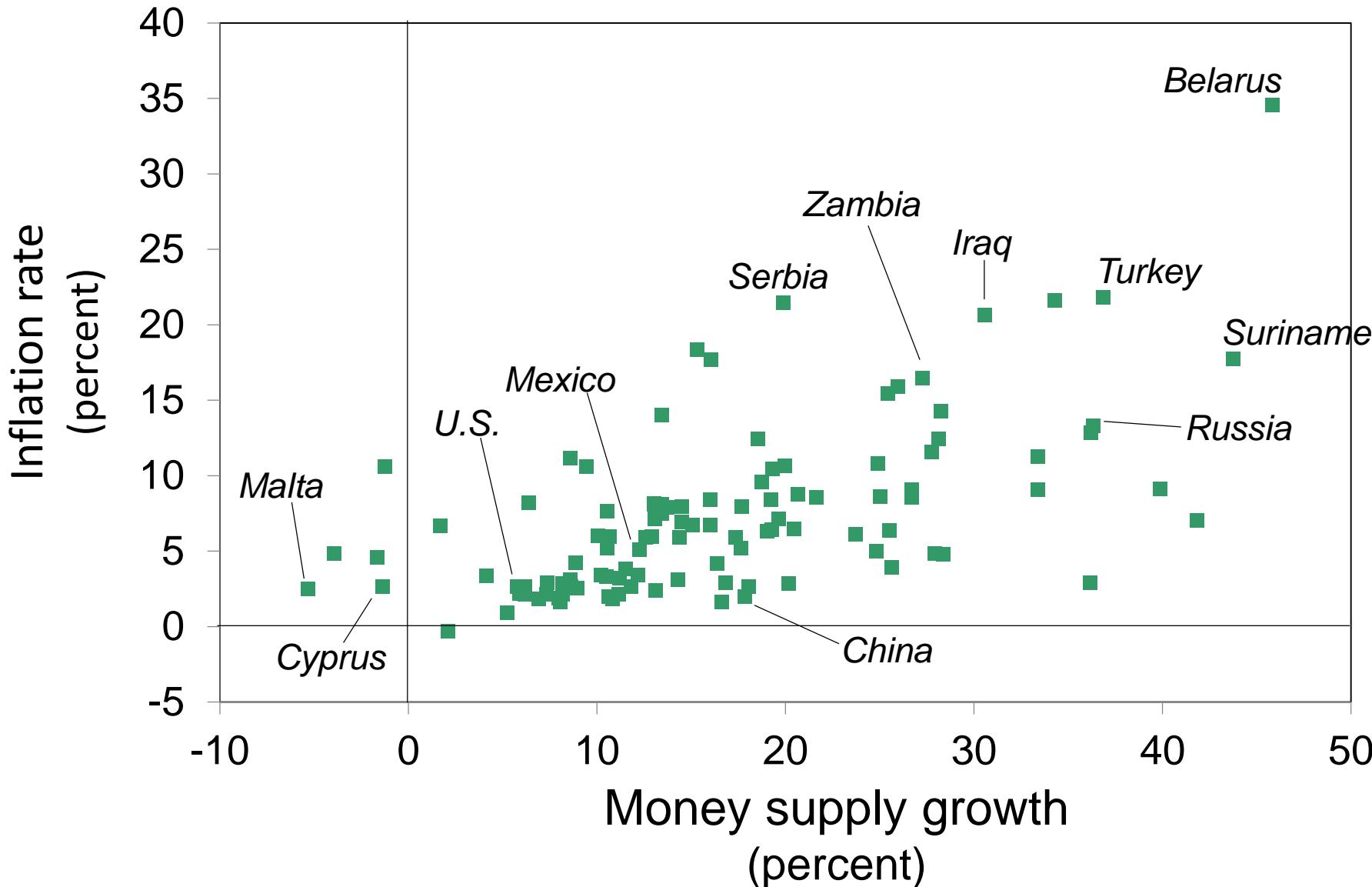
P: overall
price level
(CPI)

1/P : value of
money, i.e.
what can
you buy
with 1 TL



Result: Higher money supply, higher prices

International data on inflation and money growth (annual averages over 2000-2010)



Q3: Why is inflation high in Turkey and low in EU/Japan?

Because the growth of money supply is higher in Turkey than in the EU and in Japan

Is this a satisfactory answer?

There are also other determinants of inflation

Inflation and interest rates

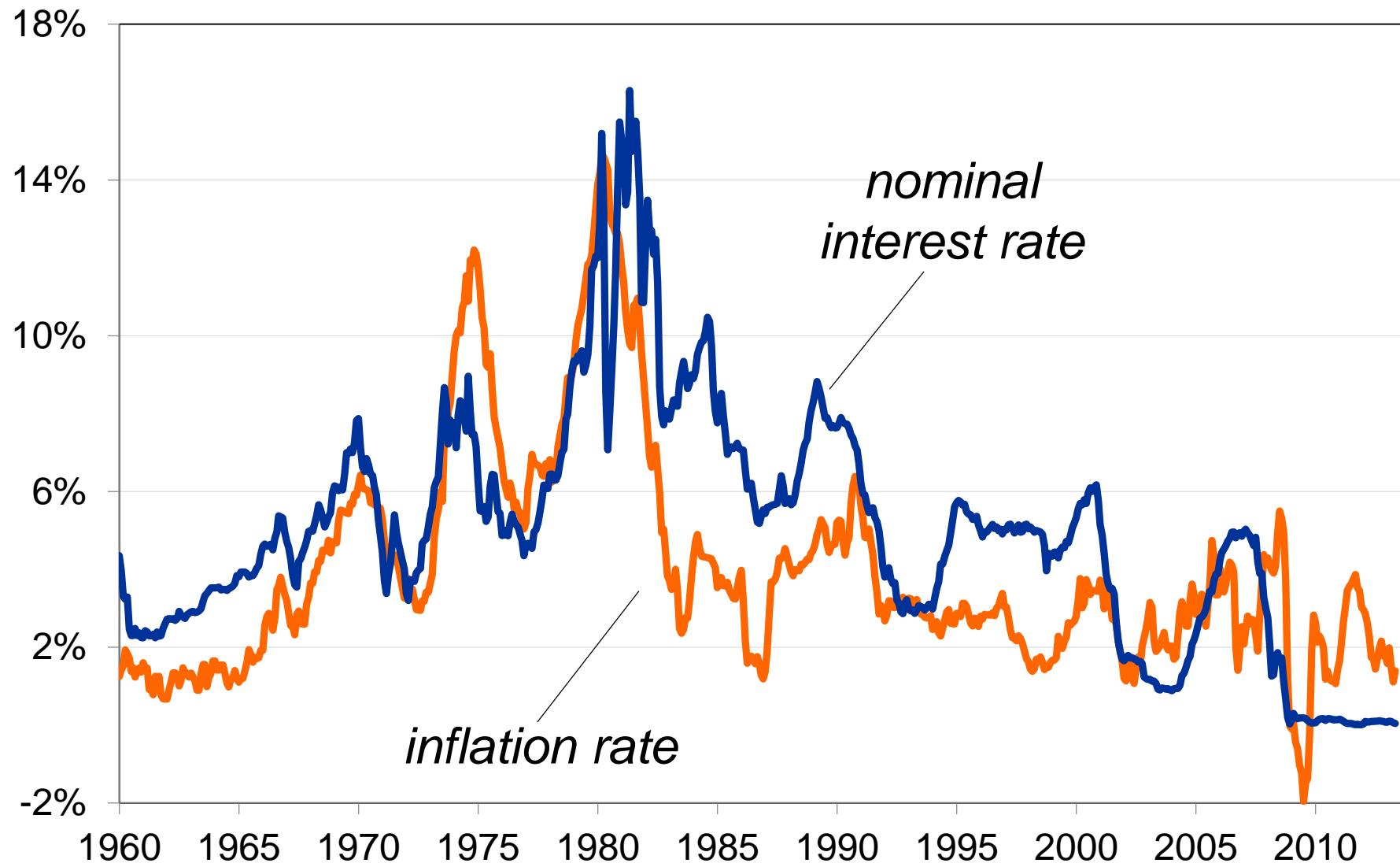
- Nominal interest rate, i
not adjusted for inflation
- Real interest rate, r
adjusted for inflation:

$$r = i - \pi$$

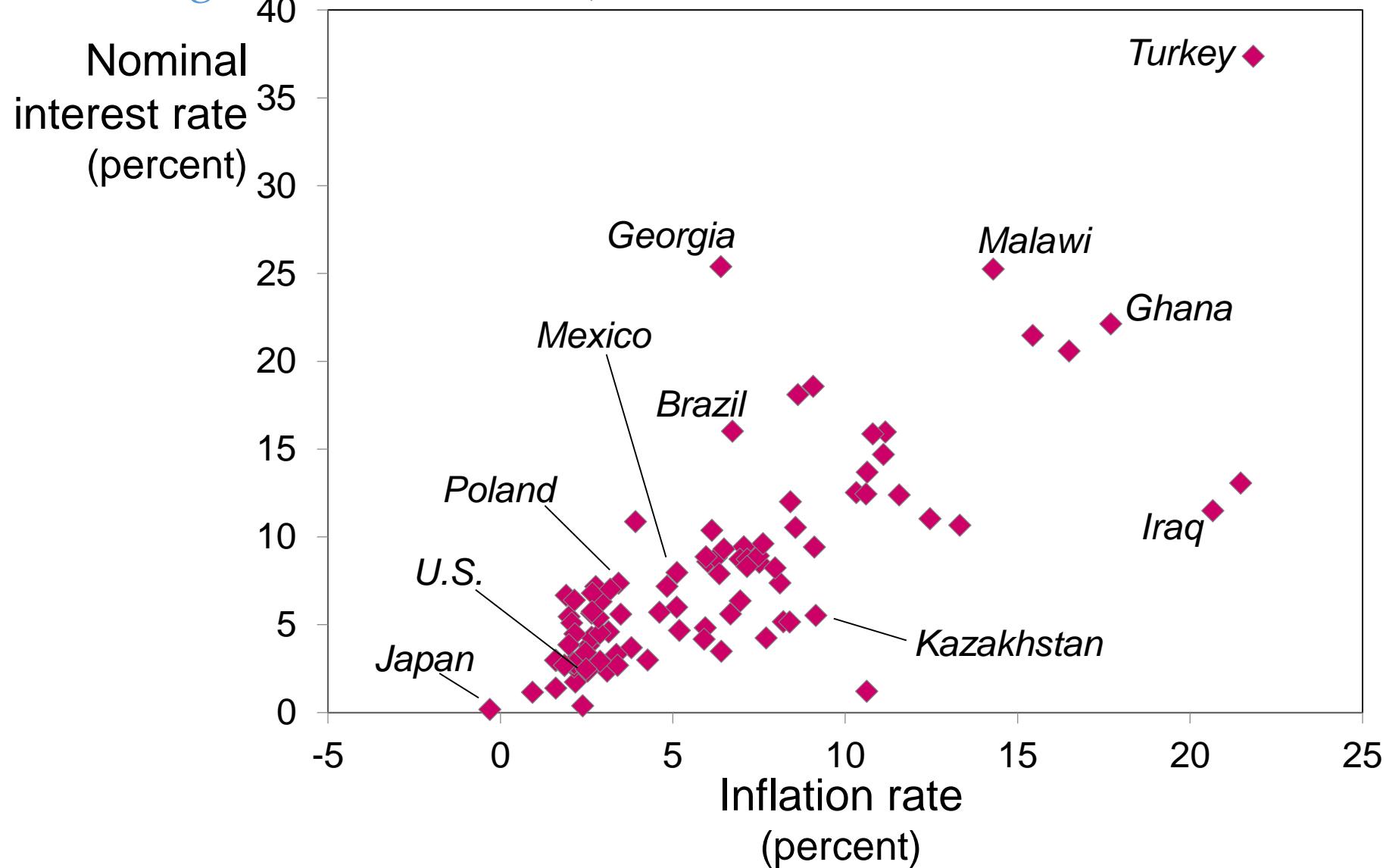
The Fisher effect

- The Fisher equation: $i = r + \pi$
- $S = I$ determines r .
- Hence, an increase in π causes an equal increase in i .
- This one-for-one relationship is called the **Fisher effect**.

U.S. inflation and nominal interest rates



Inflation and nominal interest rates in 96 countries (annual averages over 2000-2010)



The money demand function

$$\begin{aligned} (\mathbf{M}/\mathbf{P})^d &= \mathbf{L}(i, Y) \\ &= \mathbf{L}(r + E\pi, Y) \end{aligned}$$

When people are deciding whether to hold money or bonds, **they don't know** what inflation **will** be in the future.

Hence, the nominal interest rate relevant for money demand is $r + E\pi$.

Self-fulfilling Inflation Expectations

$$(\mathbf{M}/\mathbf{P})^d = \mathbf{L}(i, Y) = \mathbf{L}(r + E\pi, Y)$$

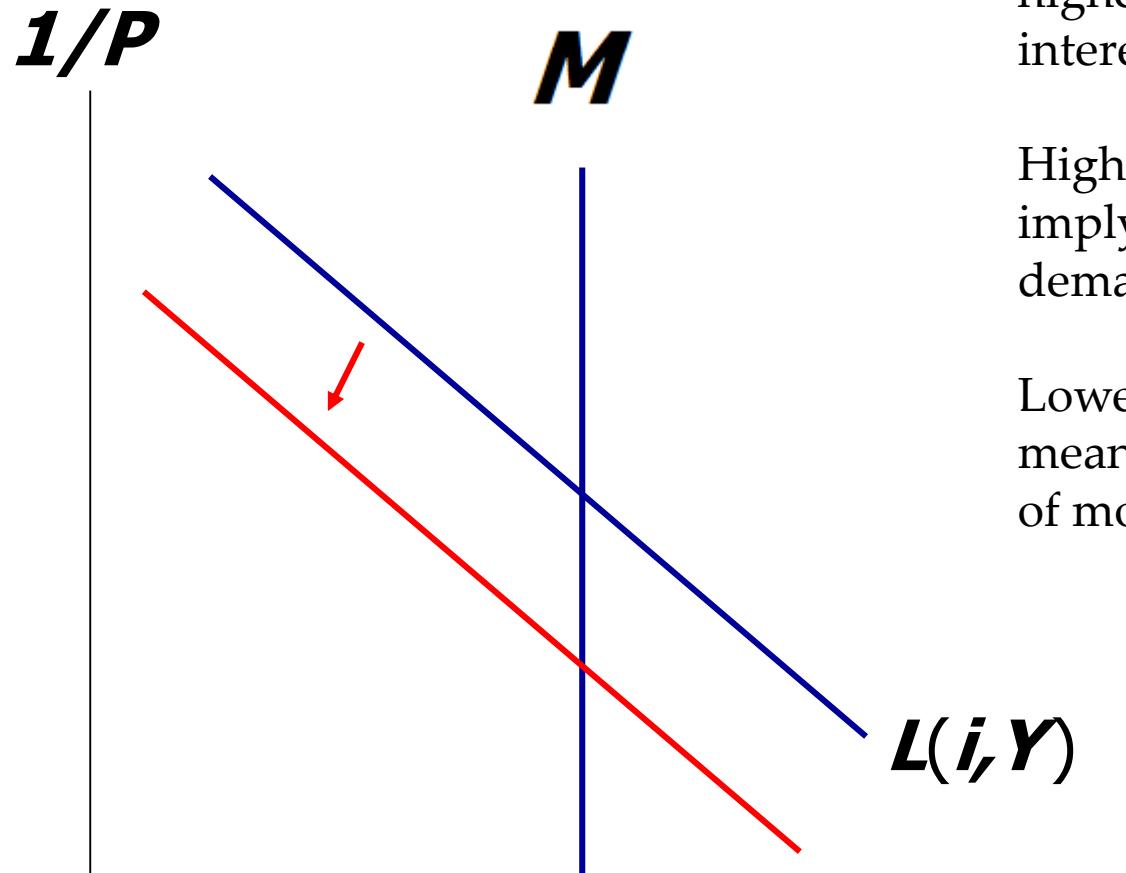
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Money Demand, Money Supply and Inflation

P: overall
price level
(CPI)

1/P : value of
money, i.e.
what can
you buy
with 1 TL



Higher expected
inflation implies
higher nominal
interest rates

Higher interest rates
imply lower money
demand

Lower demand
means lower value
of money

Q3: Why is inflation high in Turkey and low in EU/Japan?

Self-fulfilling expectations: If people expect higher inflation it happens

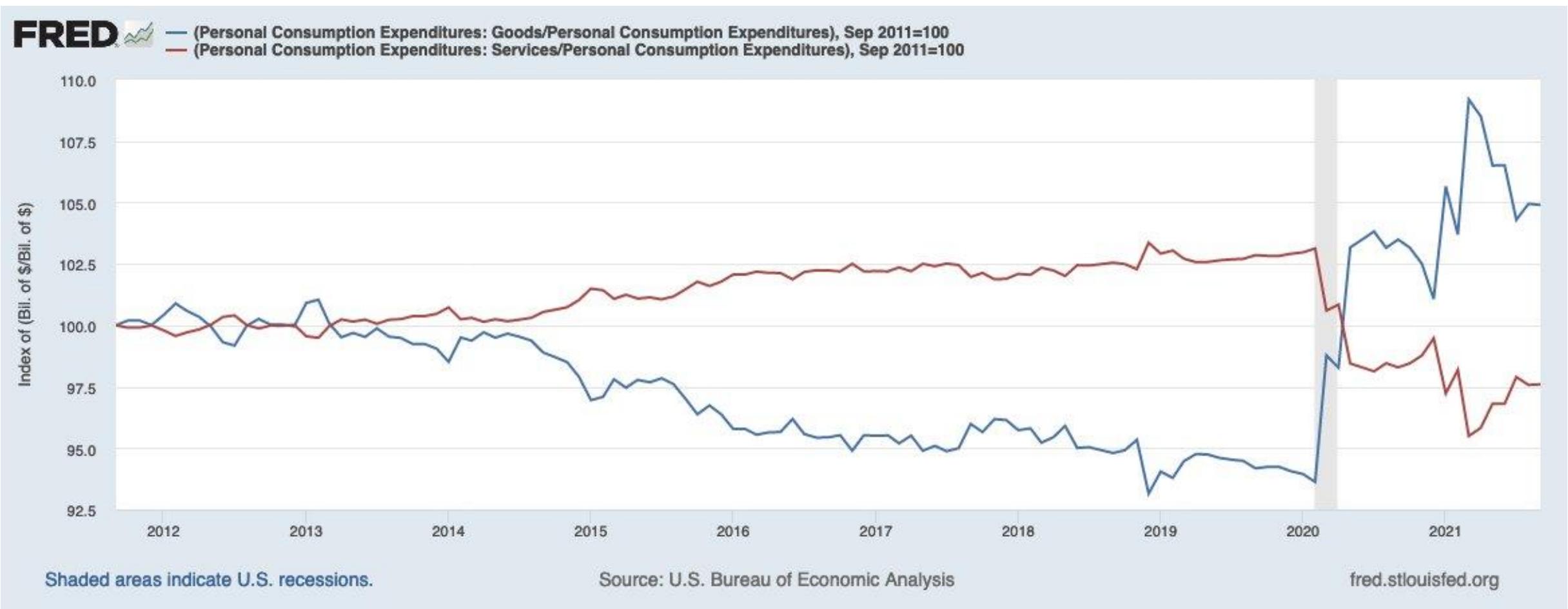
This is also a costless way to decrease inflation!!!

Hence, “expectation management” is the most important aspect of modern monetary policy

central bank credibility, central bank independence

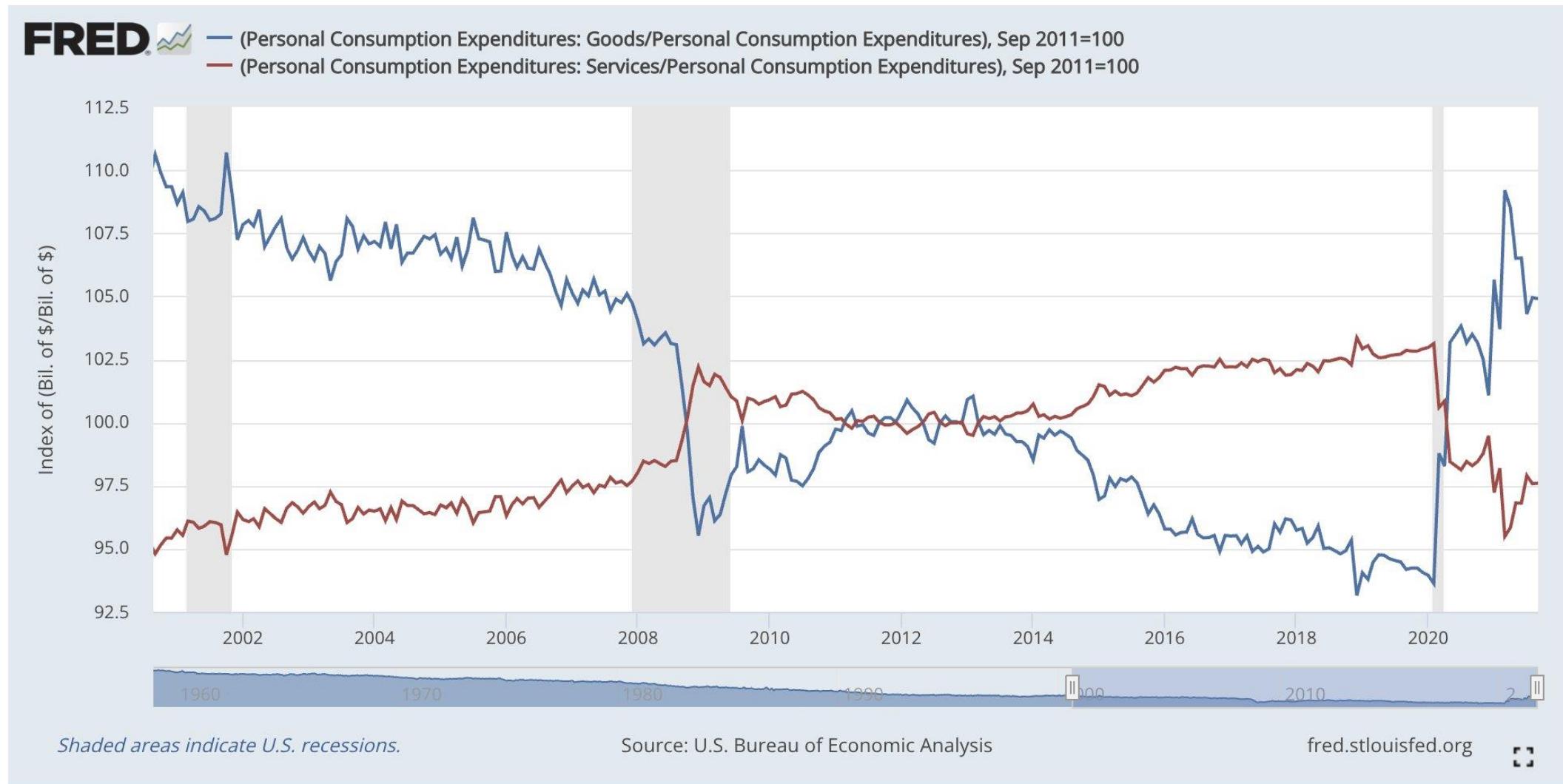
Understanding the recent inflation

During the Covid-19 recession demand for goods increased while demand for services soared.



Understanding the recent inflation

This is especially interesting given that the longer-term trend was in the **opposite** direction. Demand for services was rising.



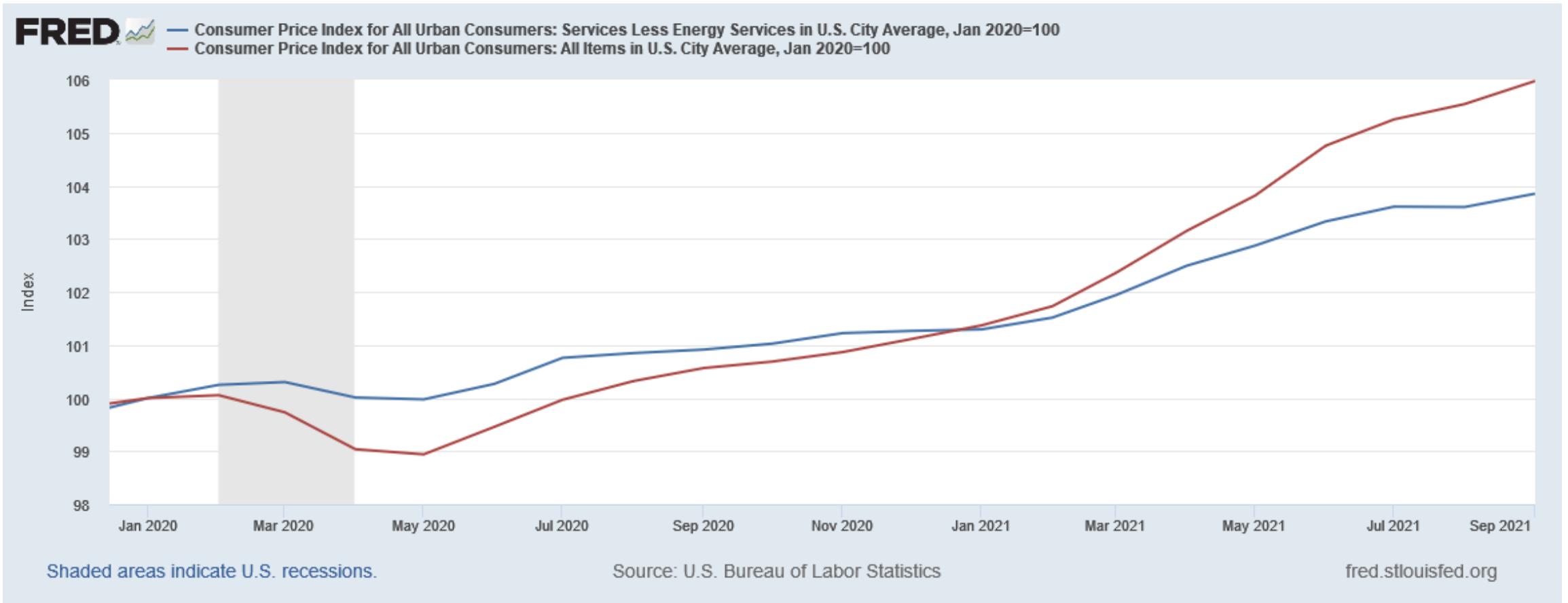
Understanding the recent inflation

Share of services in consumption expenditures decreased.



Understanding the recent inflation

Inflation of goods is significantly higher than that of services



Exchange Rate Determination

Turkish Lira per Foreign Currency

USD to TRY Chart

US Dollar to Turkish Lira

1 USD = 9.69177 TRY Nov 4, 2021, 08:39 UTC



Turkish Lira per Foreign Currency

AZN to TRY Chart

Azerbaijan Manat to Turkish Lira

• 1 AZN = 5.70344 TRY Nov 4, 2021, 08:42 UTC



Turkish Lira per Foreign Currency

THB – Thai Baht



TRY – Turkish Lira



THB to TRY Chart

Thai Baht to Turkish Lira

12H 1D 1W 1M 1Y 2Y 5Y 10Y



Turkish Lira per Foreign Currency

BRL – Brazilian Real



TRY – Turkish Lira



BRL to TRY Chart

Brazilian Real to Turkish Lira

12H

1D

1W

1M

1Y

2Y

5Y

10Y



1 BRL = 1.74419 TRY Nov 4, 2021, 08:51 UTC

Turkish Lira per Foreign Currency

RUB – Russian Ruble



TRY – Turkish Lira



RUB to TRY Chart

Russian Ruble to Turkish Lira

● 1 RUB = 0.135215 TRY Nov 4, 2021, 08:53 UTC

12H

1D

1W

1M

1Y

2Y

5Y

10Y



Turkish Lira per Foreign Currency

ZAR – South African Rand



TRY – Turkish Lira



ZAR to TRY Chart

South African Rand to Turkish Lira

• 1 ZAR = 0.634862 TRY Nov 4, 2021, 08:52 UTC

12H 1D 1W 1M 1Y 2Y 5Y 10Y



Turkish Lira per Foreign Currency

EGP – Egyptian Pound



TRY – Turkish Lira



EGP to TRY Chart

Egyptian Pound to Turkish Lira

12H

1D

1W

1M

1Y

2Y

5Y

10Y



• 1 EGP = 0.617385 TRY Nov 4, 2021, 08:44 UTC

What are exchange rate charts telling us?

- We see a depreciation of TRY against USD since 2013
- Since 2016 TRY depreciated against almost all currencies
- Exchange rate movements **mid-2013** is not Turkey-specific
 - Common to other EMs
 - driven by USD
 - known as “taper tantrum”

TRY appreciates, *not depreciates*, against Argentine Peso



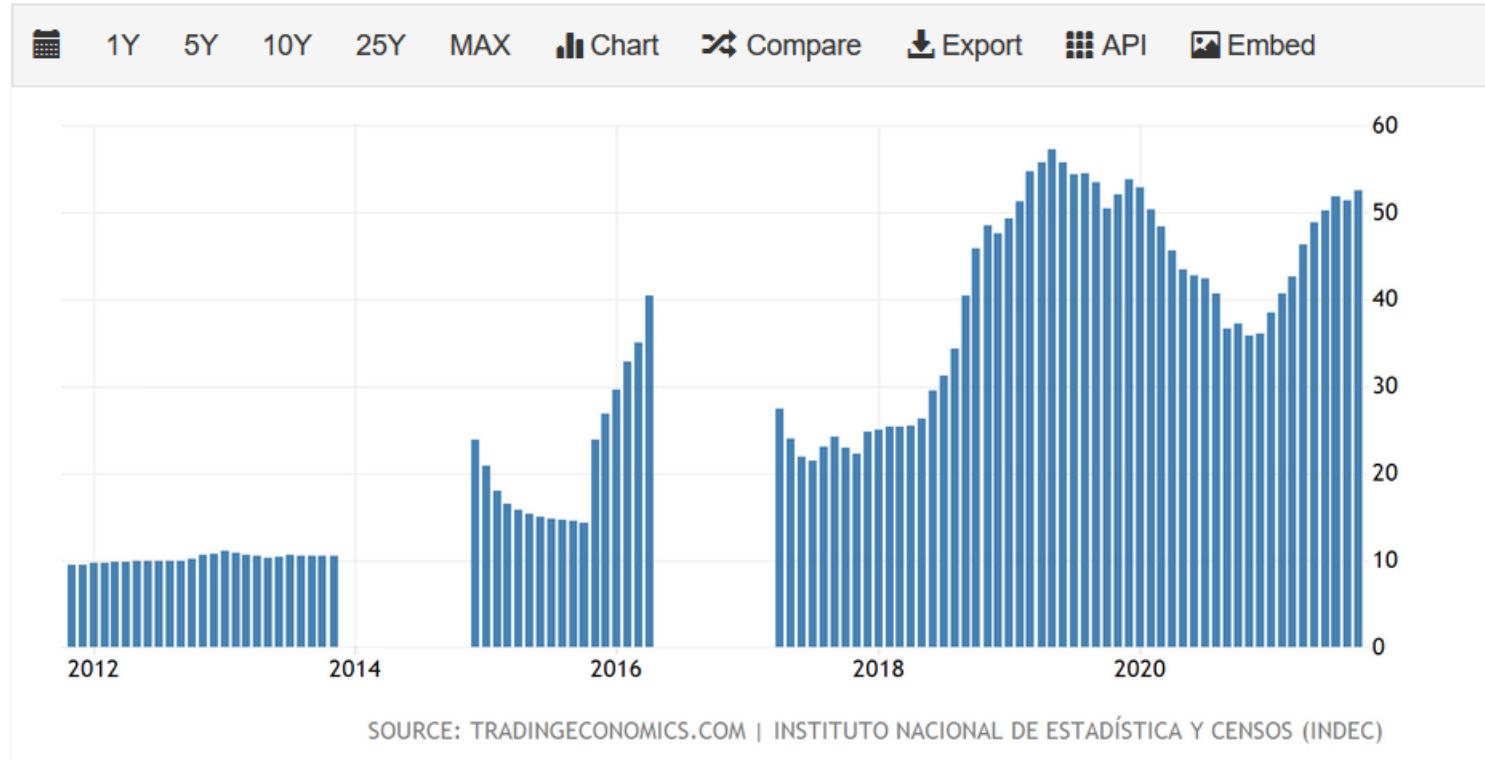
What are exchange rate charts telling us?

- Exchange rate movements **mid-2013** is not Turkey-specific
 - Common to other EMs
 - driven by USD
 - known as “taper tantrum”

Inflation matters: only the Argentine Peso lost value against TRY and Argentina happens to be the only country with an average inflation above the Turkish one

Inflation in Argentina is even worse than in Turkey

The annual inflation rate in Argentina accelerated to 52.5 percent in September of 2021 from 51.4 percent in the previous month, above market expectations of 51.7 percent. It was the biggest annual rise in consumer prices since January 2020. source: Instituto Nacional de Estadística y Censos (INDEC)



We will see the relationship between the **domestic inflation** and value of **domestic currency**

First, let's dismiss a misperception

The level of an exchange rate *does not* mean much

1 USD = 9.7 TRY vs 1 USD = 110 JPY

But the change in those levels are important

In 2013, 1 USD was less than 2 TRY, now 9.7
In 2013, 1 USD was around 95 JPY, now 110

Stability of an exchange rate is the main aim



Vaziyet ✅ @vaziyetcomtr · 53m
Uludağ Üniversitesi Mühendislik
Fakültesi öğretim üyesi Prof. Dr. Yusuf
Ulcay, "1 Dolar 10 Lira olsa ne olur. 1
Dolar 137 Japon Yeni ediyor" dedi.



Prof. Dr. Yusuf Ulcay
@yusufulcay

1 Dolar 10 Lira olsa ne olur.
1 Dolar 137 Japon Yeni ediyor.
Ama Japonya çok güçlü,
çünkü onlarda
1 Dolara vatanını satan hainler yok..

23:51 · 29.10.2021 · Twitter for iPhone

77 Retweet 1.147 Alıntı Tweet 774 Beğeni

Bu Tweet silinmiş.

Japanese Yen per USD



A few exchange rates, as of November, 3, 2021

<i>country</i>	<i>exchange rate</i>
Euro area	0.86 euro/\$
Indonesia	14,356 rupiahs/\$
Japan	114.03 yen/\$
Mexico	20.65 pesos/\$
Russia	71.98 rubles/\$
South Africa	15.32 rand/\$
U.K.	0.73 pounds/\$

These are all **nominal exchange rates**, what really matters is the **real exchange rate**

The real exchange rate

*the lowercase
Greek letter
epsilon*

ϵ = real exchange rate,
the **relative price of
domestic goods
in terms of foreign goods**
(e.g. Japanese Big Macs per U.S.
Big Mac)

The determinants of the nominal exchange rate

- Start with the expression for the real exchange rate:

$$\boldsymbol{\varepsilon} = \frac{\mathbf{e} \times \mathbf{P}}{\mathbf{P}^*}$$

Solve for the nominal exchange rate:

$$\mathbf{e} = \boldsymbol{\varepsilon} \times \frac{\mathbf{P}^*}{\mathbf{P}}$$

Purchasing Power Parity (PPP)

Two definitions:

- A doctrine that states that goods must sell at the same (currency-adjusted) price in all countries.
- The nominal exchange rate adjusts to equalize the cost of a basket of goods across countries.

Reasoning:

- No arbitrage, the law of one price

Purchasing Power Parity (PPP)

- PPP:

$$e \times P = P^*$$

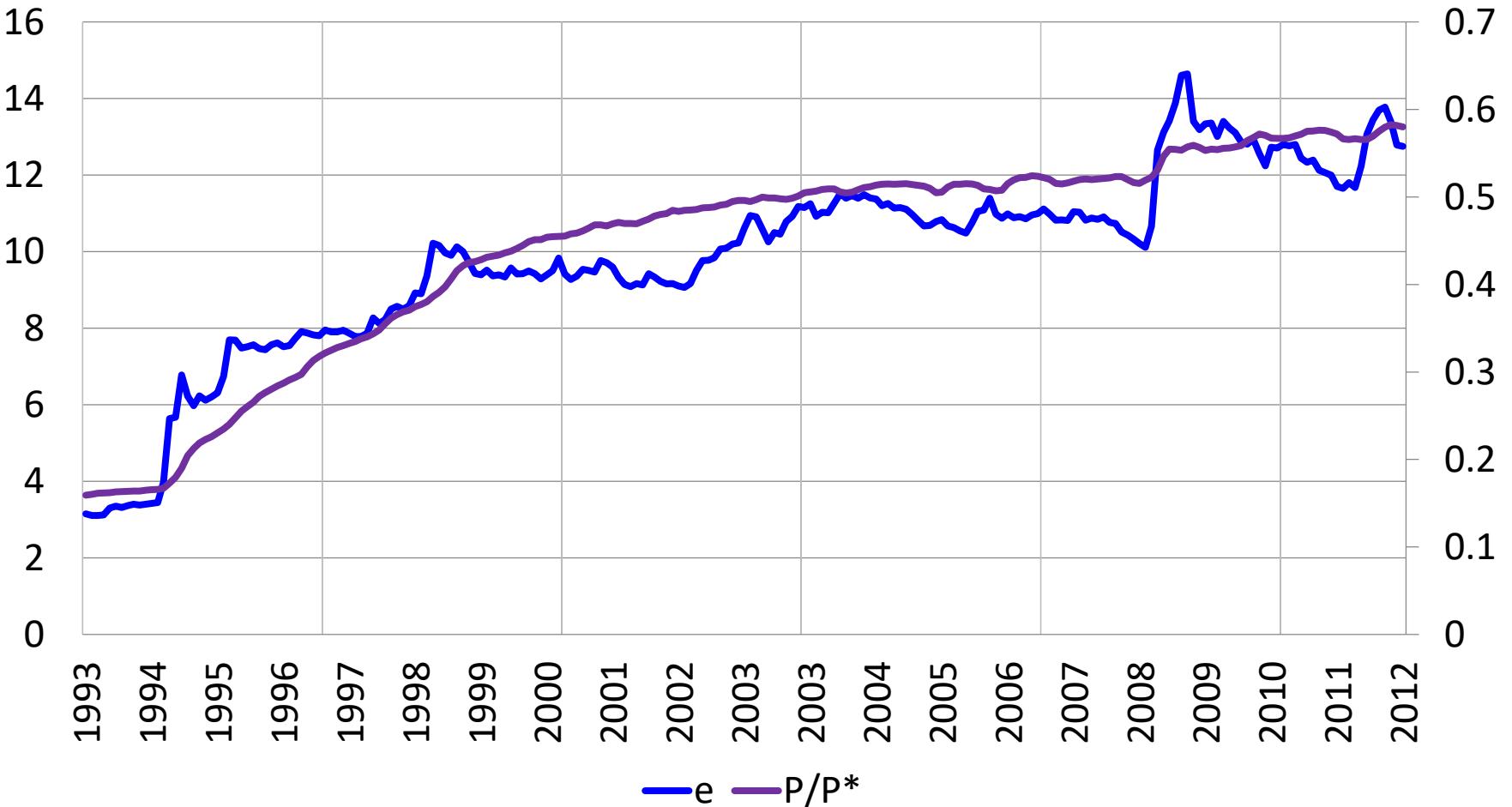
Cost of a basket of domestic goods, in foreign currency.

Cost of a basket of domestic goods, in domestic currency.

Cost of a basket of foreign goods, in foreign currency.

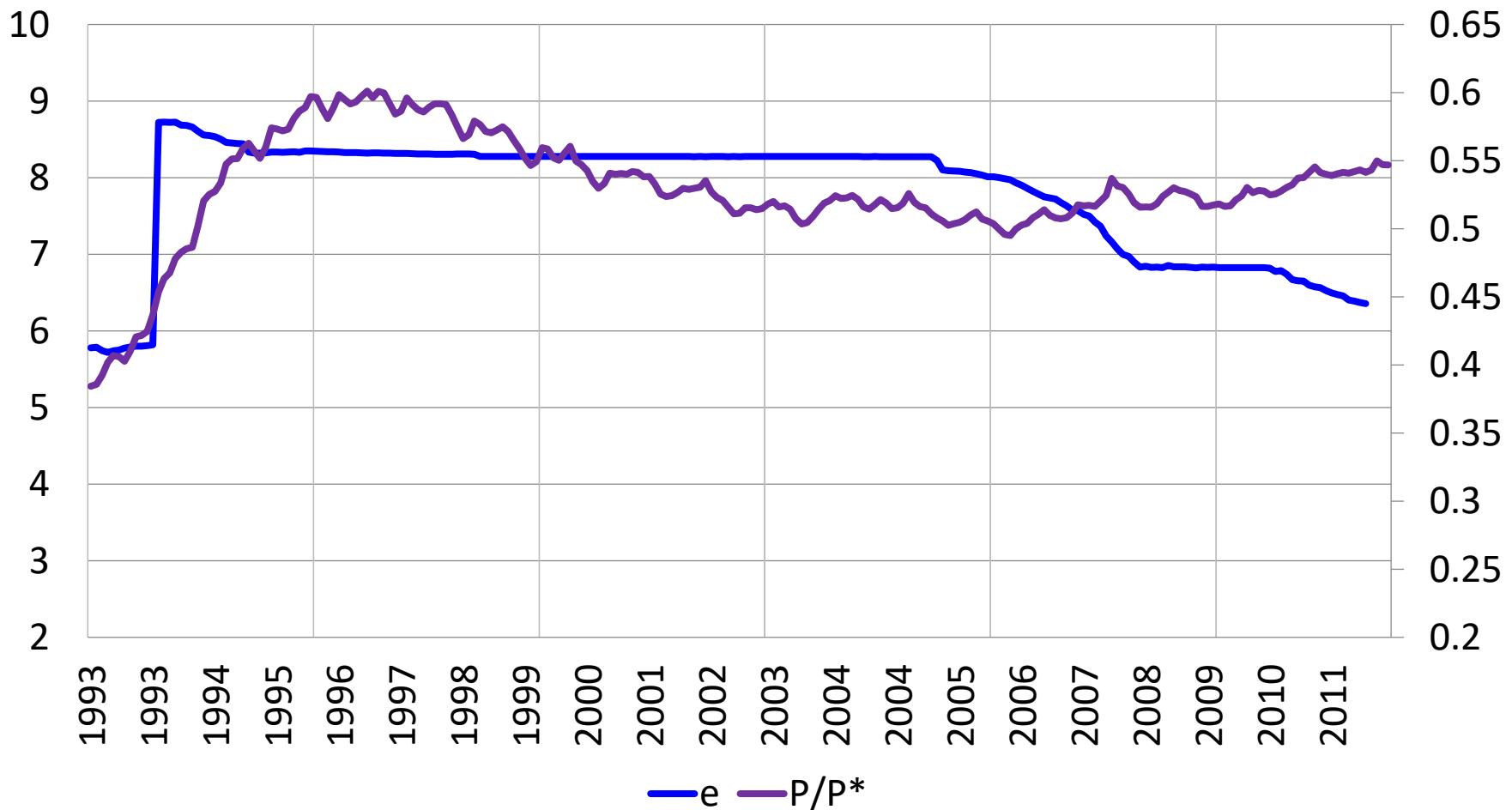
- Solve for e : $e = P^*/P$
- PPP implies that the nominal exchange rate between two countries equals the ratio of the countries' price levels.

Pesos per dollar



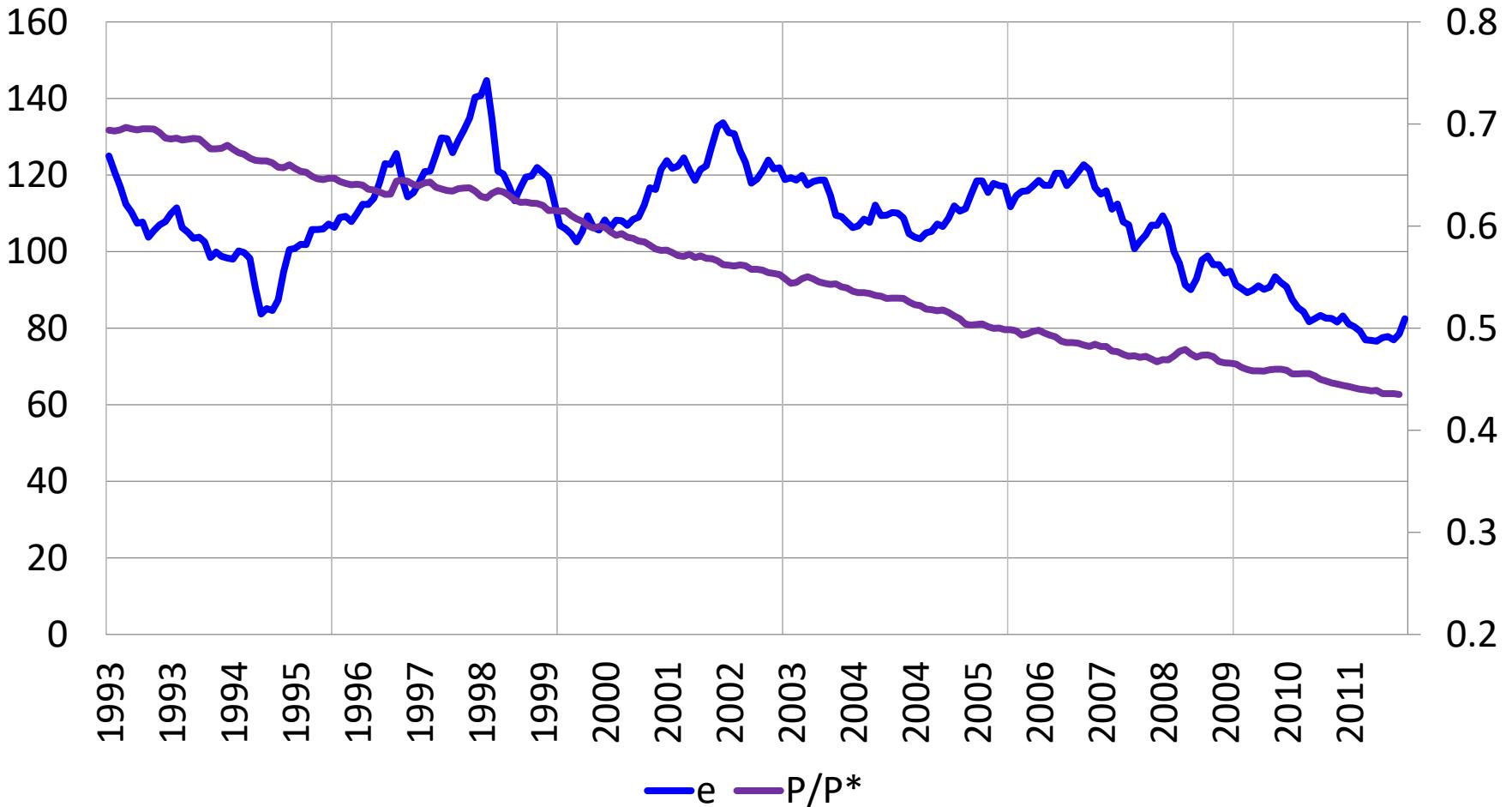
Source: Fed via FRED.

Yuan per dollar



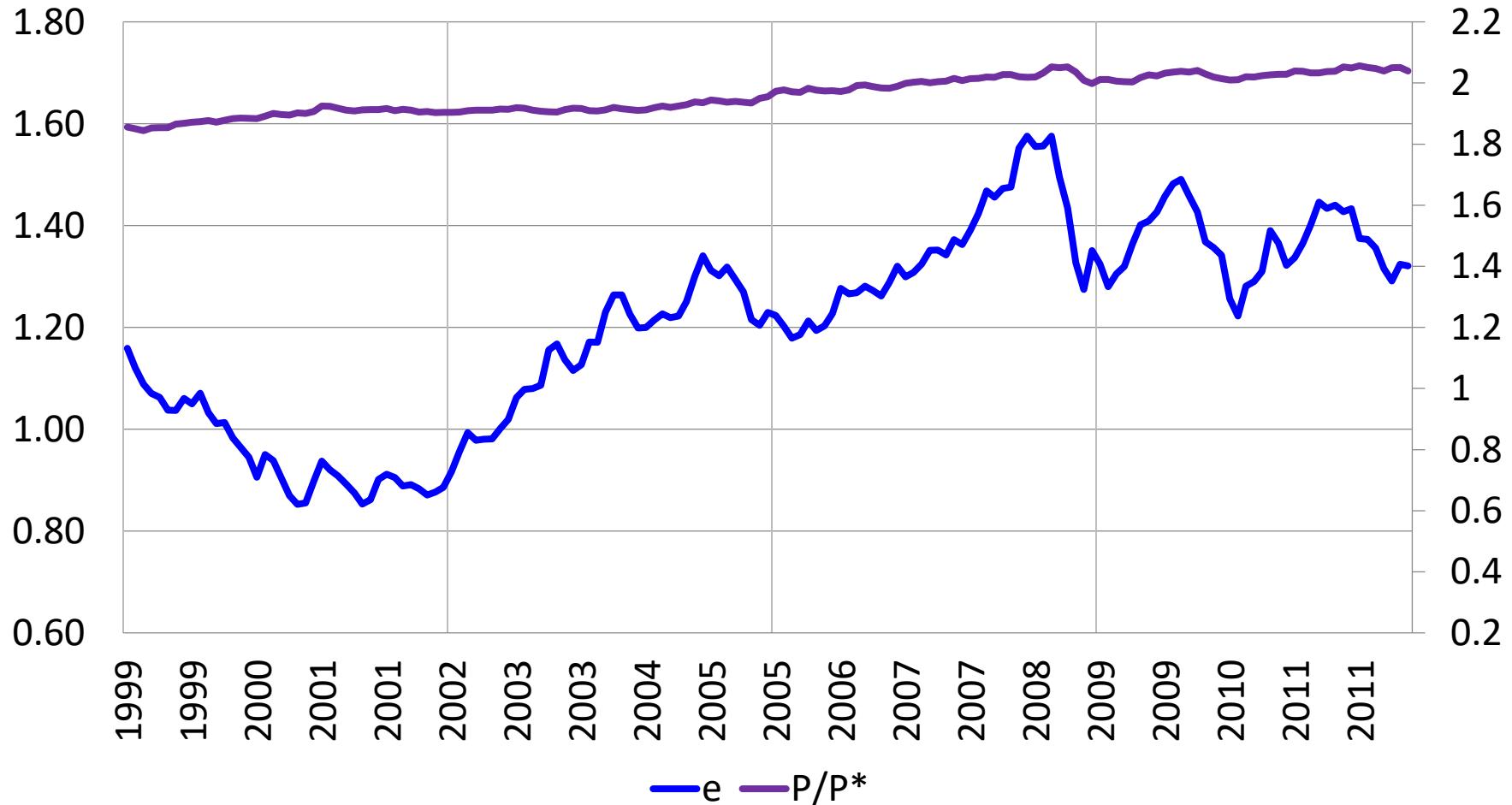
Source: Fed via FRED.

Yen per dollar



Source: Fed via FRED.

Dollars per euro



Source: Fed via FRED.

Exchange rates and prices

- Dollar v peso
 - Large movements in P/P^* reflected in e
 - Still lots of variation in RER
- Dollar v euro
 - Lots of variation in e
 - Little variation in P/P^*
 - Therefore: movements in RER = eP^*/P mirror those in e
 - PPP fails miserably

Purchasing Power Parity (PPP)

- An approximation that works best
 - When there are large differences in inflation rates
 - And over long periods of time
- Otherwise variations in exchange rates mirror variations of relative prices and costs

Does PPP hold in the real world?

No, for two reasons:

1. International arbitrage not possible.
 - nontraded goods
 - transportation costs
2. Different countries' goods not perfect substitutes.

Yet, PPP is a useful theory:

- It's simple & intuitive.
- In the real world, nominal exchange rates tend toward their PPP values over the long run.

Short-run variations in exchange rates

Very difficult to predict

Considered the most difficult price to predict (random walk)

However, there are some regularities that are helpful

- High-interest rate currencies (TRY, ZAR) tend to appreciate slowly, but depreciate suddenly
“go up the stairs but down the elevator”
- “Carry trade” related factors are informative about the risks

Q5: How to forecast USD/TL exchange rate?

National Income Accounting

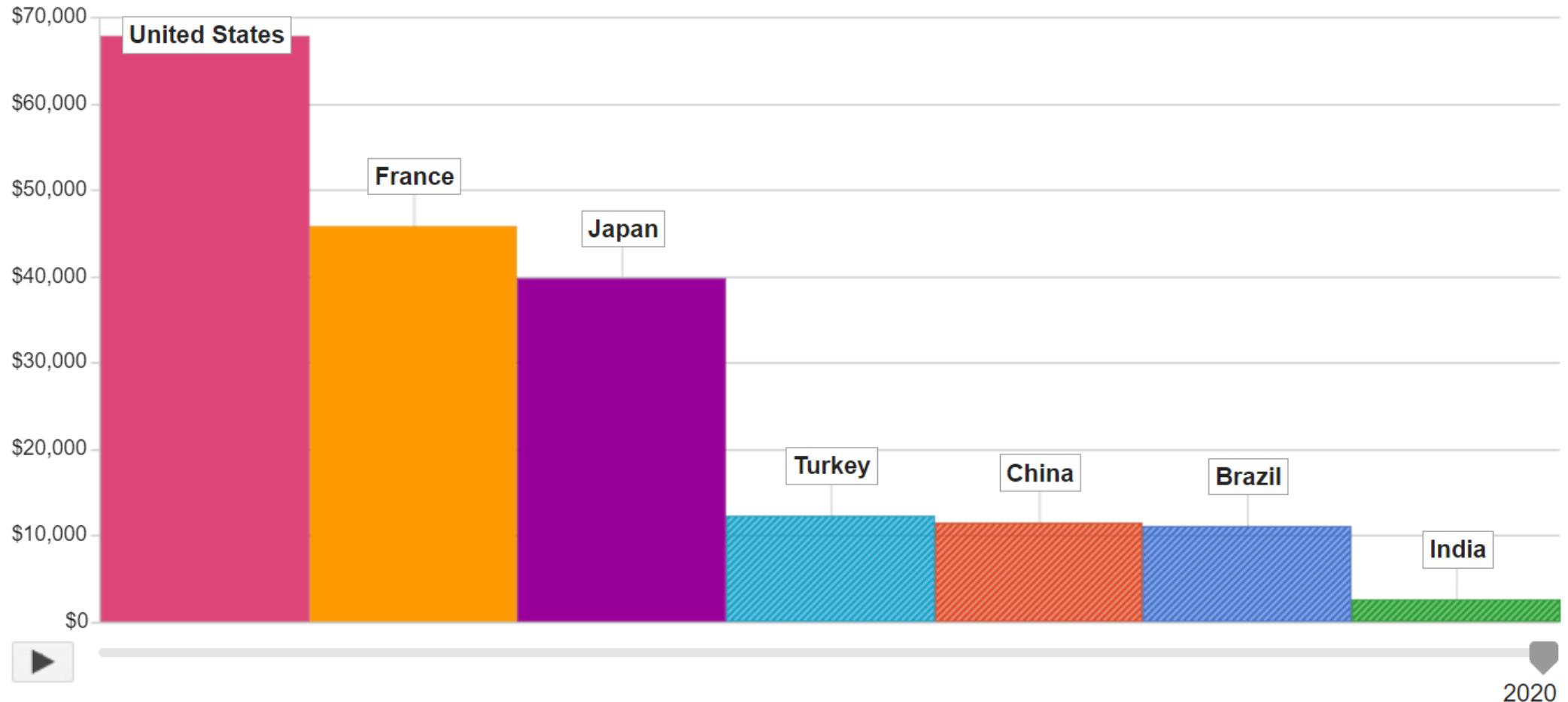
GDP, Gross Domestic Product

- Total amount of production in an economy (“output”)
 - Sum value-added by all production units
 - Equals: payments to labor and capital (owners)
 - Equals: income
 - Equals: sales of final good (last stage of value chain)
- Why “domestic”? Why “gross”?
- Do countries differ much in GDP? GDP growth?
 - Let’s look at some data...

GDP per capita (US dollars)

GDP per capita, current prices [?](#)

Countries, World - Descending order [?](#)

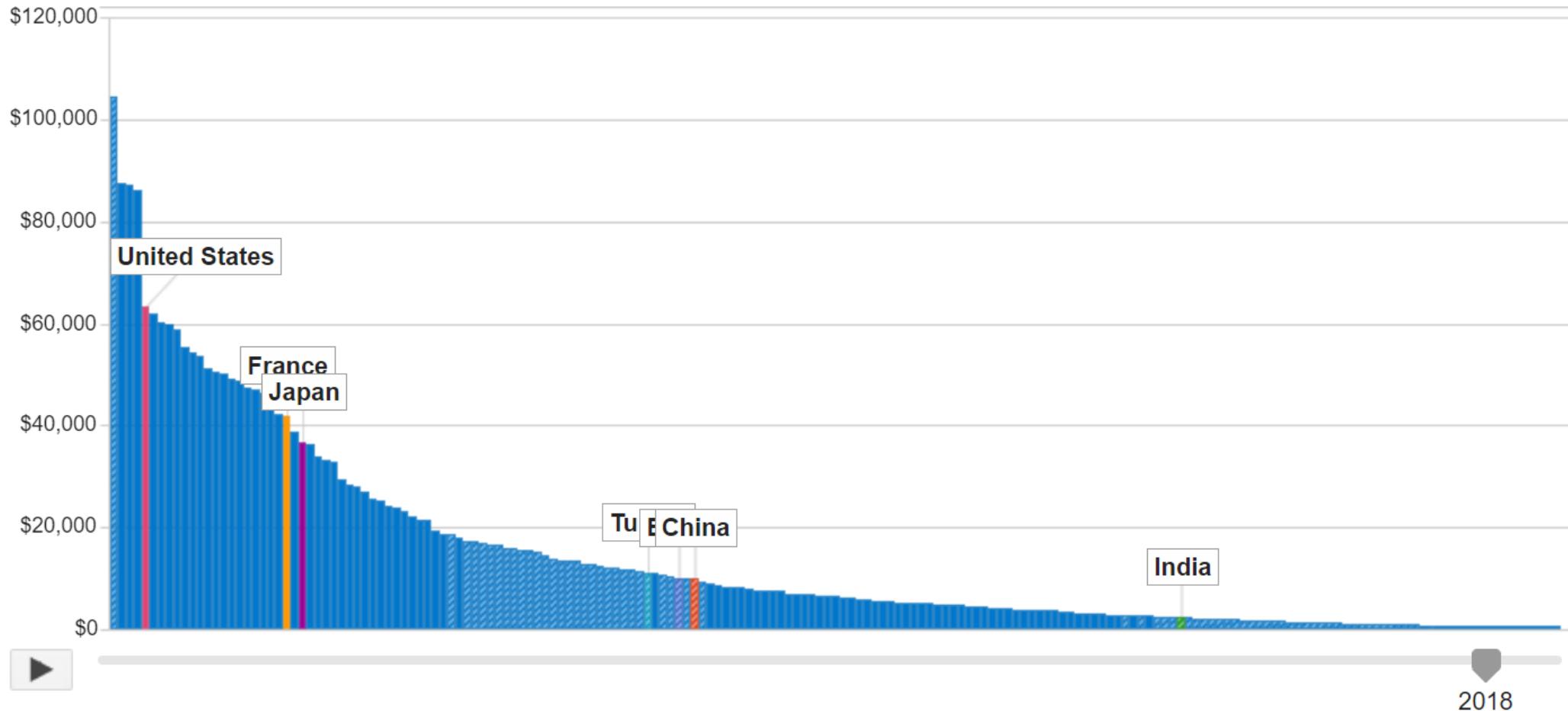


Data from IMF, October 2014 WEO Last updated: Jun 19, 2018

GDP per capita (US dollars)

GDP per capita, current prices [?](#)

Countries, World - Descending order [?](#)



Data from [IMF, October 2014 WEO](#) Last updated: Jun 19, 2018

US and France (2008 numbers)

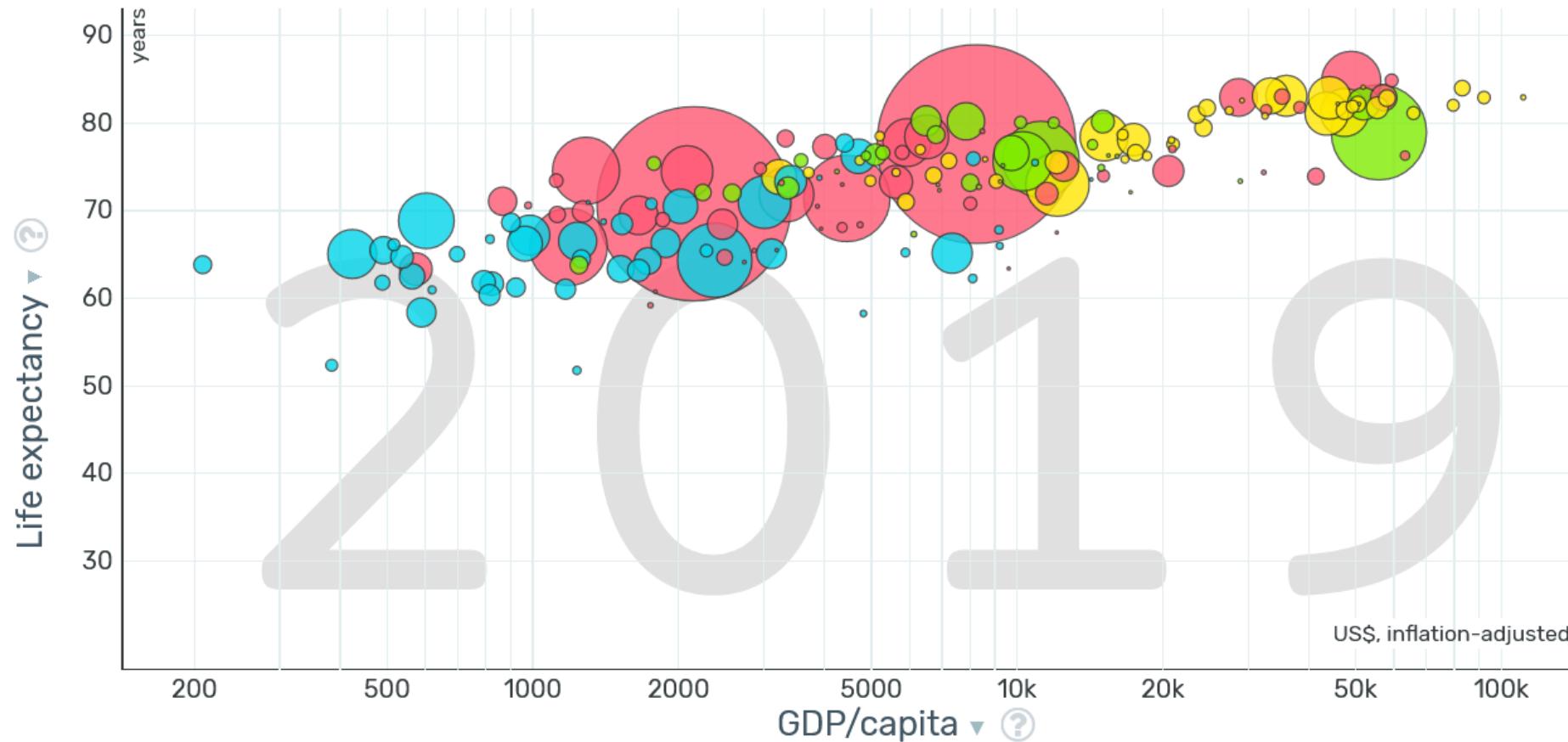


Per capita GDP: \$47,440
Avg weekly work hours: 35



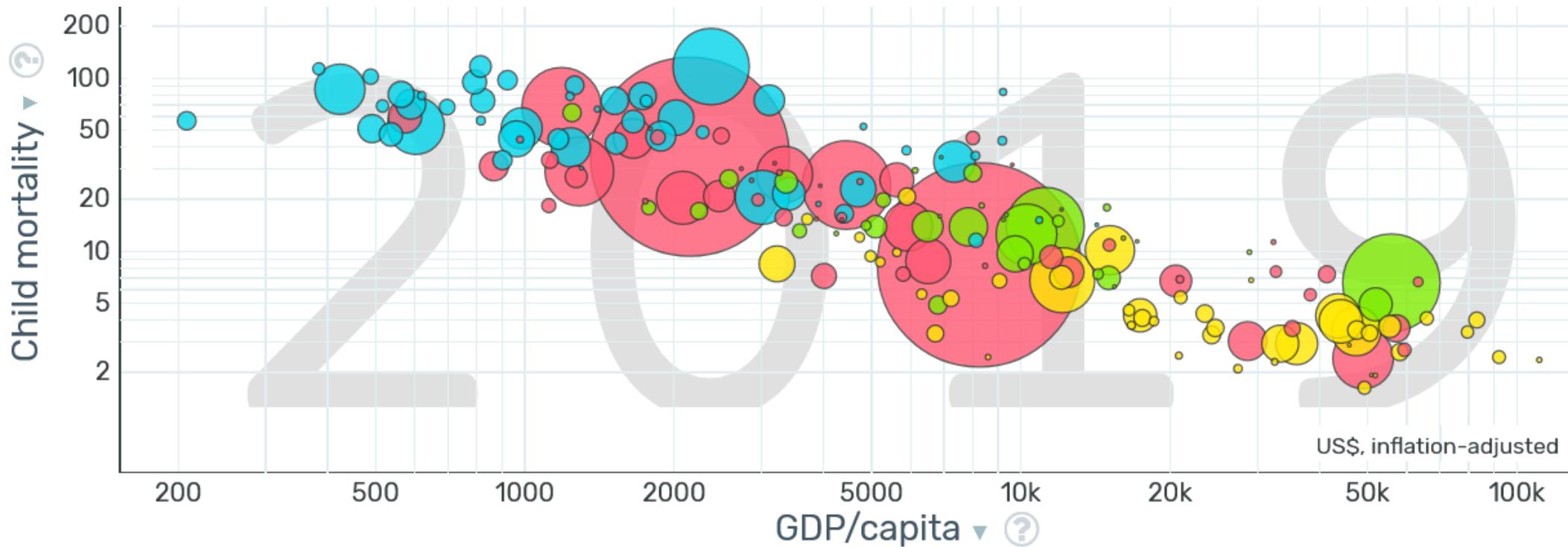
Per capita GDP: \$34,205 Avg
weekly work hours: 29

Life Expectancy (2019)

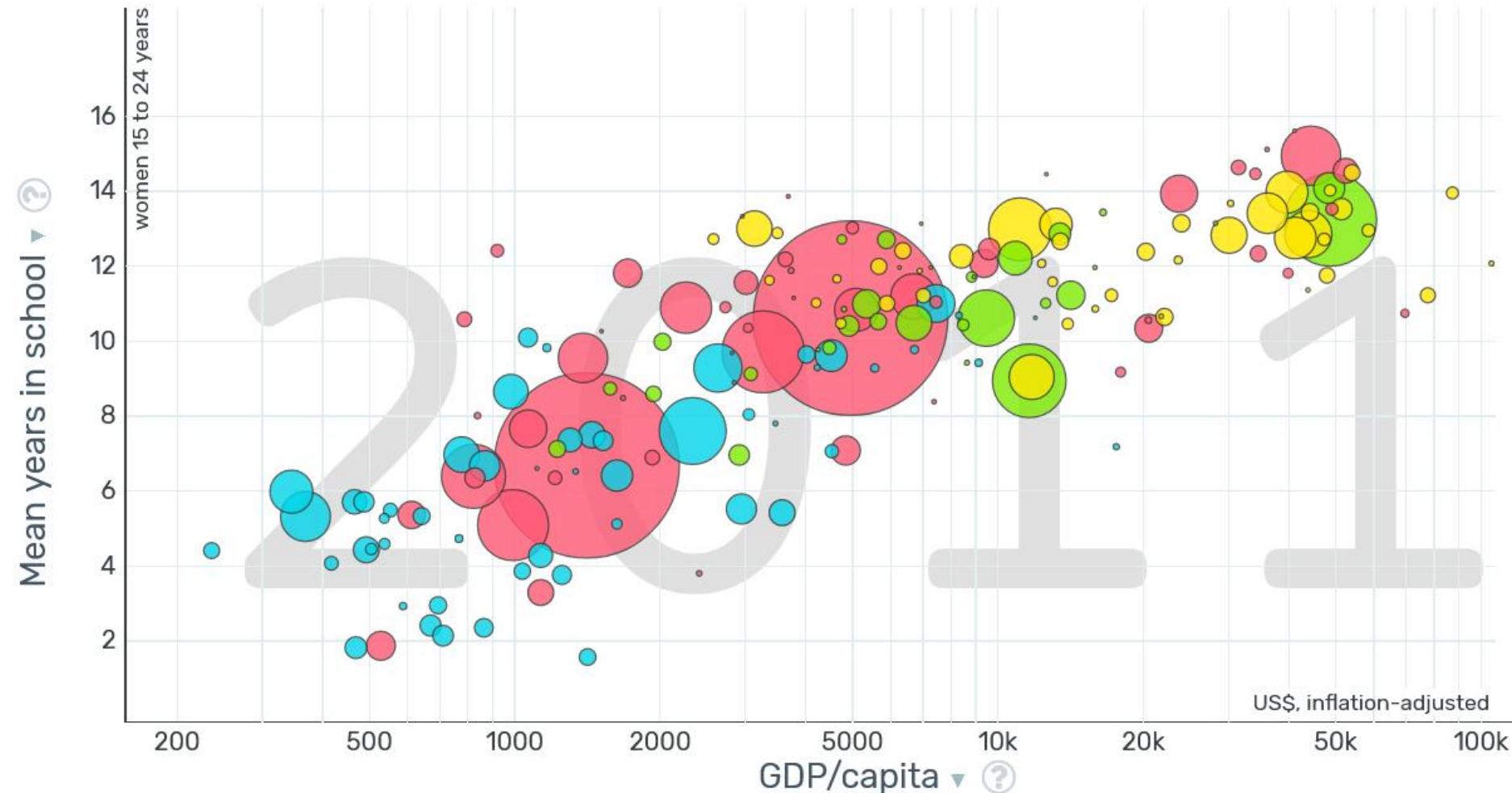


Child Mortality (2019)

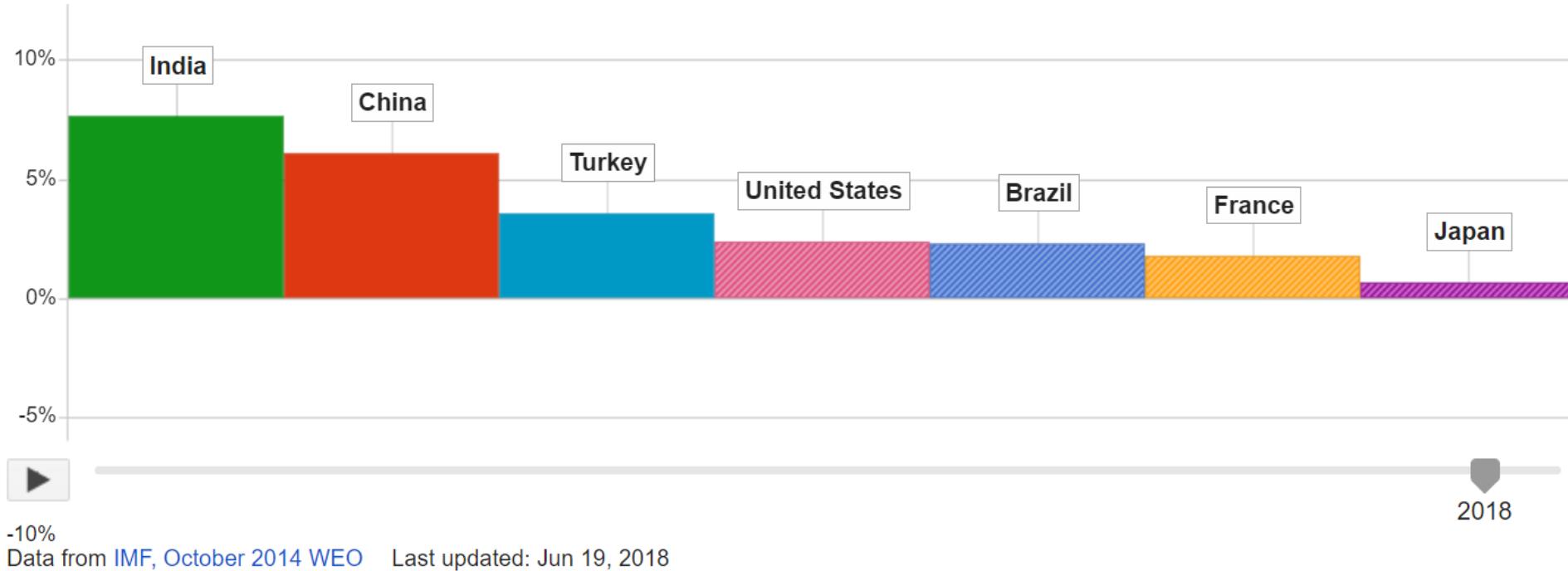
0-5 year-olds dying per 1,000 born



Years in school, young women(2019)



GDP growth (2018 % real)



Why growth matters

- Anything that effects the long-run rate of economic growth – even by a tiny amount – will have huge effects on living standards in the long run.

annual growth rate of income per capita	increase in standard of living after...		
	...25 years	...50 years	...100 years
2.0%	64.0%	169.2%	624.5%
2.5%	85.4%	243.7%	1,081.4%

GDP measurement

- Three related approaches
 - Value added
 - Income
 - Final sales of **finished goods**
- Example: I had steak in a restaurant last week, how will that show up in GDP?
 - As value added [by the restaurant]
 - As income [salary of the waiter + profits of owner]
 - As final sales [the price I paid for the steak]
 - **All of these things are linked in an obvious way**

The expenditure components of GDP

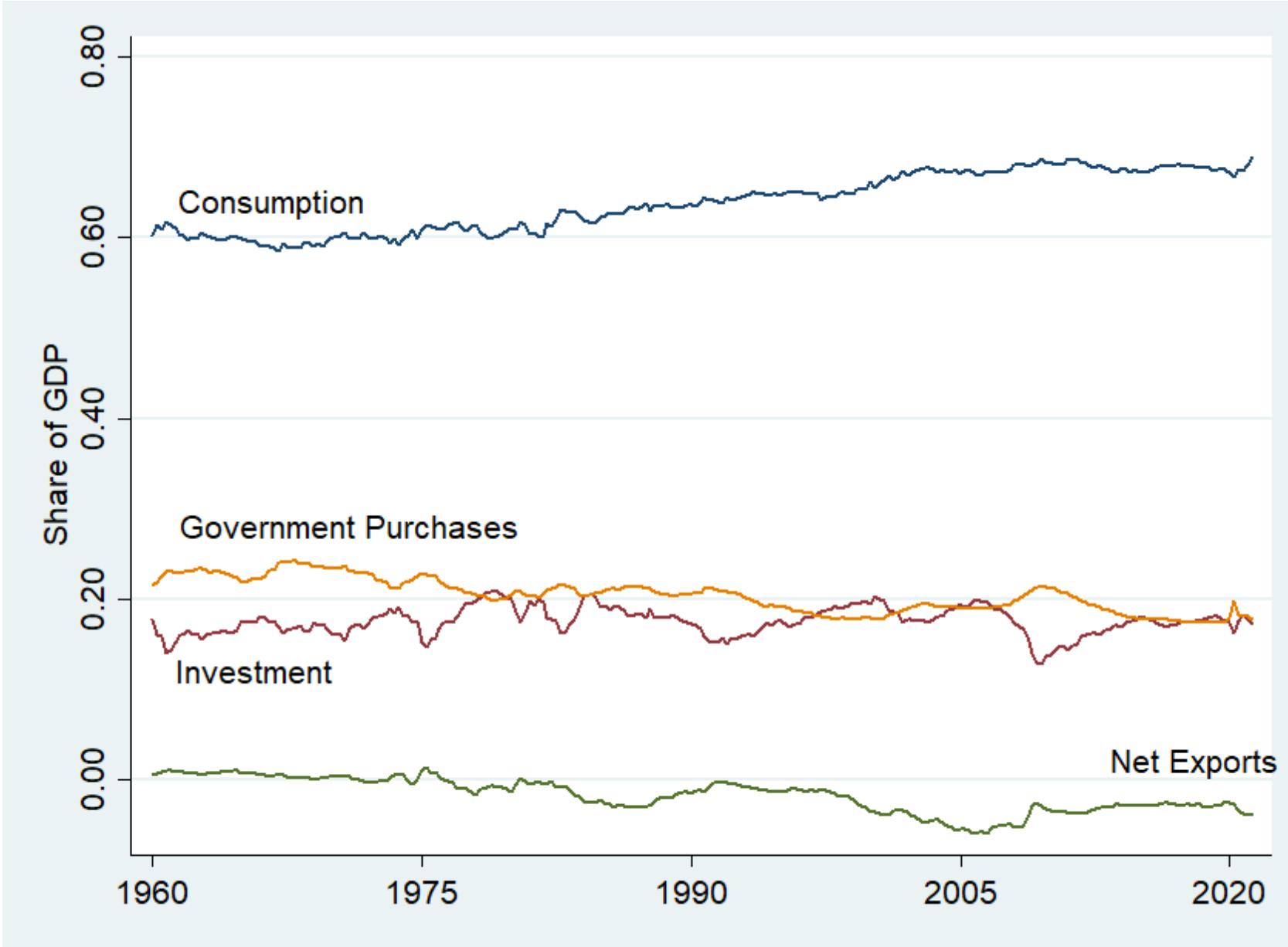
- consumption, C
 - investment, I
 - government spending, G
 - net exports, NX

An important identity:

$$Y = C + I + G + NX$$

value of total output *aggregate expenditure*

GDP by expenditure component



Source: US NIPA.

Separating Price and Quantity

- Note the important role played by market prices
- To measure value added we use prices as to determine relative values
 - A car costs \$20,000 and a cup of coffee costs \$2 because the car embodies 10,000 times the value of the cup of coffee
- Problem: Monetary units are fickle and can change for reasons that have nothing to do with fundamental value of goods and services
 - In Zimbabwe in July 2008 prices rose by 231 million percent... do we really think that economic activity increased by 231 million percent?

Prices and quantities

- General Electric (say)
 - Sales up 25% year-on-year
 - Higher prices or more units?
 - Which prices? Units of which product?
- US economy
 - Nominal GDP (meaning GDP measured with current dollar prices) up 5% year-on-year
 - How much is just higher prices, how much more real value?
- What to remember
 - Inflation is the “average” increase in prices
 - “Real” growth is the “average” increase in quantities
 - “Averaging” is trickier than it looks
 - Several natural approaches sometimes produce different answers

Real vs. nominal GDP

- GDP is the *value* of all final goods and services produced.
- **Nominal GDP** measures these values using current prices.
- **Real GDP** measure these values using the prices of a base year.
- **This distinction is very important!**

NOW YOU TRY

Real and Nominal GDP

	2020		2021	
	P	Q	P	Q
good A	\$30	900	\$31	1,000
good B	\$100	192	\$102	200

- Compute nominal GDP in each year.
- Compute real GDP in each year using 2010 as the base year.

Answers

nominal GDP *multiply Ps & Qs from same year*

2020: $\$46,200 = \$30 \times 900 + \$100 \times 192$

2021: $\$51,400$

real GDP *multiply each year's Qs by 2020 Ps*

2020: $\$46,200$

2021: $\$50,000$

Real GDP controls for inflation

- Changes in nominal GDP can be due to:
 - changes in prices
 - changes in quantities of output produced
- Changes in real GDP can only be due to changes in quantities, because real GDP is constructed using constant base-year prices.

Turkish GDP in USD or in TL?

#TheEconomist: this week's CORRECTION:
#Turkey GDP/capita hasn't tripled in past 10 years - in real terms +43%
pic.twitter.com/WhEdcSbbYZ

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become like the drugs that appeared in
Tahrir Square." ■

Correction: In last week's briefing, we said that Turkey's GDP per person had tripled in the past ten years. This was true only in nominal terms. In real terms, GDP per person has risen by just 43%. Sorry.

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6:06 AM - 15 Jun 2013

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 **Dani Rodrik** @rodrikdani · Jun 15
Priceless. "@wellsla TheEconomist: this week's CORRECTION: #Turkey GDP/capita hasn't tripled in past 10 years pic.twitter.com/dxjksV29HF"

Details

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 **Mehmet Simsek** @memetsimsek · Jun 15
Only if it was correct! Turkey's GDP rose to \$786 billion from \$230 bn in 2002 (\$198bn in 1990)... Up 3.5 folds @rodrikdani @wellsla

Details

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 **Mehmet Simsek** @memetsimsek · Jun 15
International per capita GDP comparisons are made in US dollar terms. Per capita GDP has tripled in Turkey @CanCemgil @rodrikdani @wellsla

Details

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 **Dani Rodrik** @rodrikdani · Jun 15
. But not in nominal dollars when comparing changes over time. Frankly, shame on you @memetsimsek

Details

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Turkish GDP in USD or in TL?

Cumhuriyet

Arama...

İşte OVP'deki dolar kuru tahmini

2022-2024 yıllarını kapsayan, Orta Vadeli Program; Resmî Gazete'nin mükerrer sayısında yayımlanan Cumhurbaşkanı kararı ile yürürlüğe girdi. OVP'de hükümetin yıl yıl dolar kuru tahmini de yer aldı.

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cumhuriyet.com.tr

06 Eylül 2021 Pazartesi, 08:03



The link between trade & capital flows

$$NX = Y - (C + I + G)$$

implies

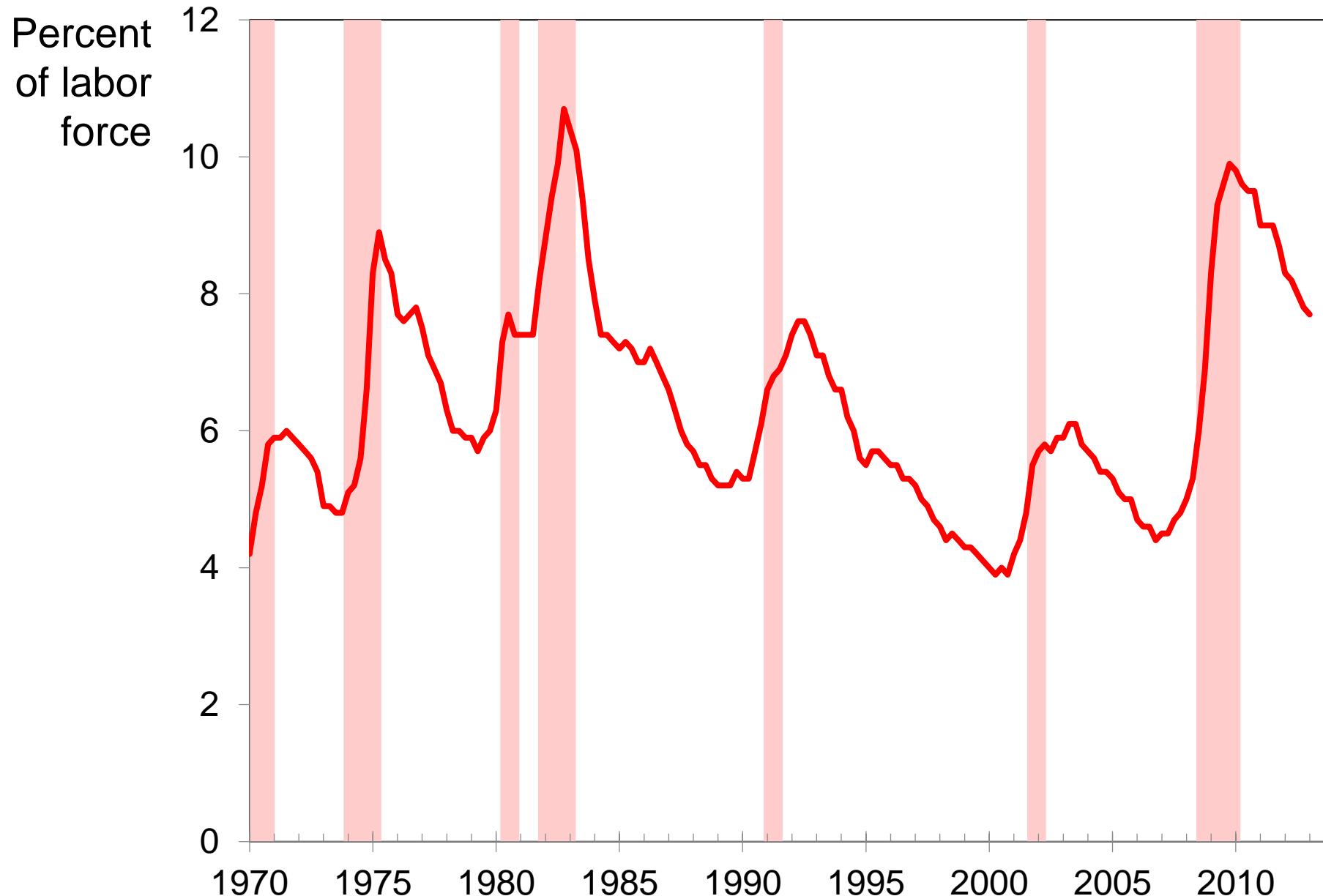
$$\begin{aligned} NX &= (Y - C - G) - I \\ &= S - I \end{aligned}$$

trade balance = net capital outflow

Thus,

a country with a trade deficit ($NX < 0$)
is a net borrower ($S < I$).

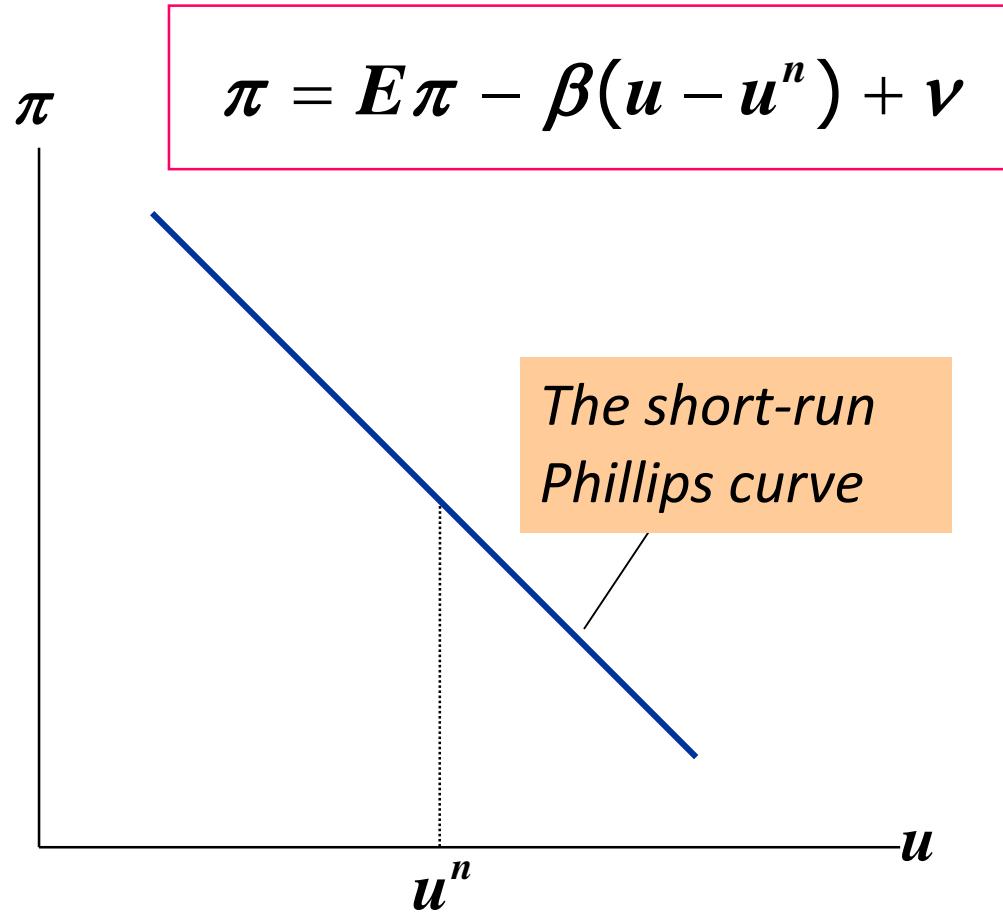
Unemployment



The Phillips curve

In the short run, policymakers face a tradeoff between π and u .

Decreasing unemployment means more people have jobs & salaries, which in turn means bigger demand for goods & services.



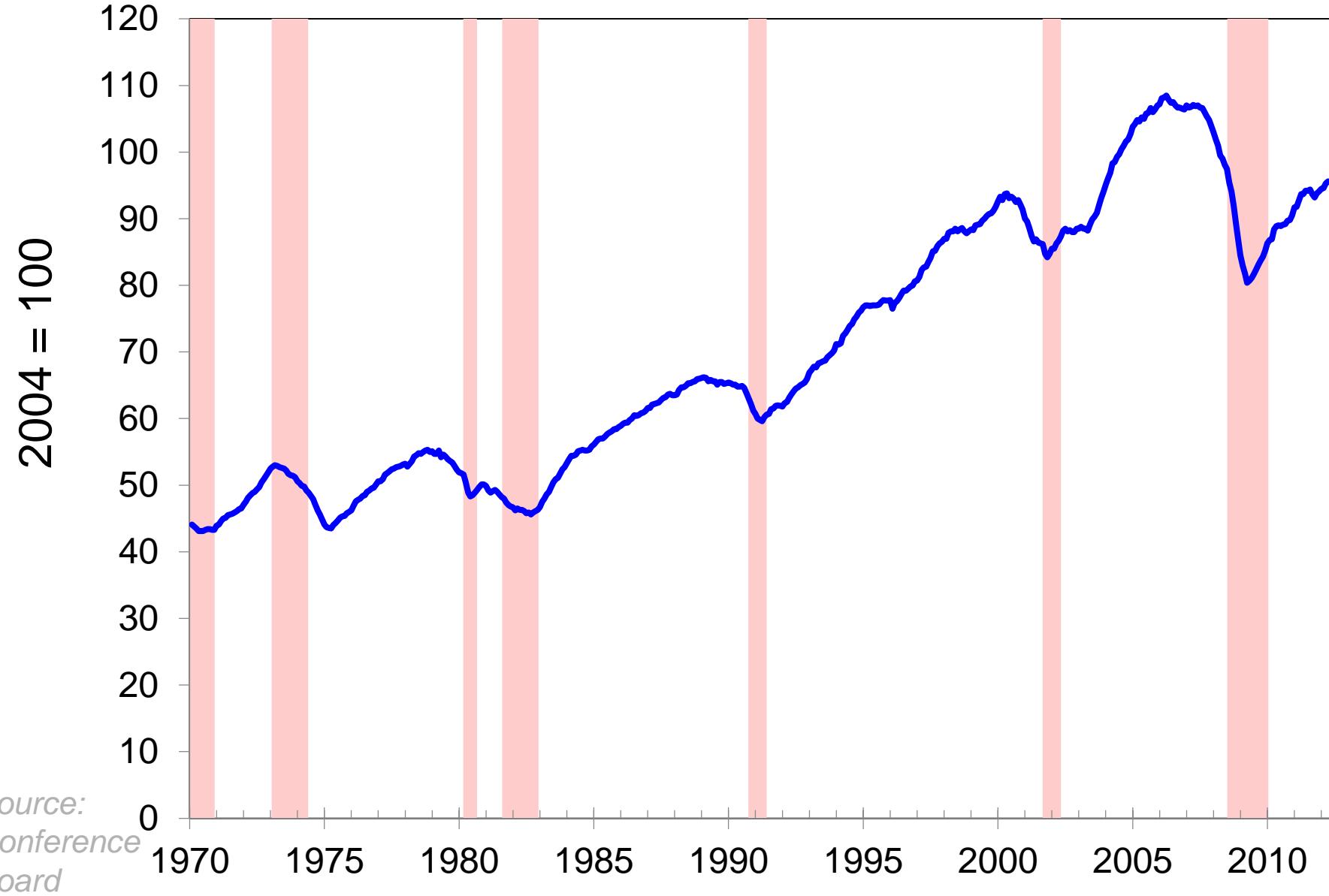
Index of Leading Economic Indicators

- Published monthly by the Conference Board.
- Aims to forecast changes in economic activity 6-9 months into the future.
- Used in planning by businesses and govt, despite not being a perfect predictor.

Components of the LEI index

- Average workweek in manufacturing
- Initial weekly claims for unemployment insurance
- New orders for consumer goods and materials
- New orders, nondefense capital goods
- Vendor performance
- New building permits issued
- Index of stock prices
- M2
- Yield spread (10-year minus 3-month) on Treasuries
- Index of consumer expectations

Index of Leading Economic Indicators, 1970-2012



What we covered

Banking System

Money & Money creation in the modern banking system

Money & Inflation & Interest rates

Exchange Rate Determination

National Income Accounting

What we covered

Q1: Is Bitcoin money?

Q2: Why is the price of gold increasing (or not)?

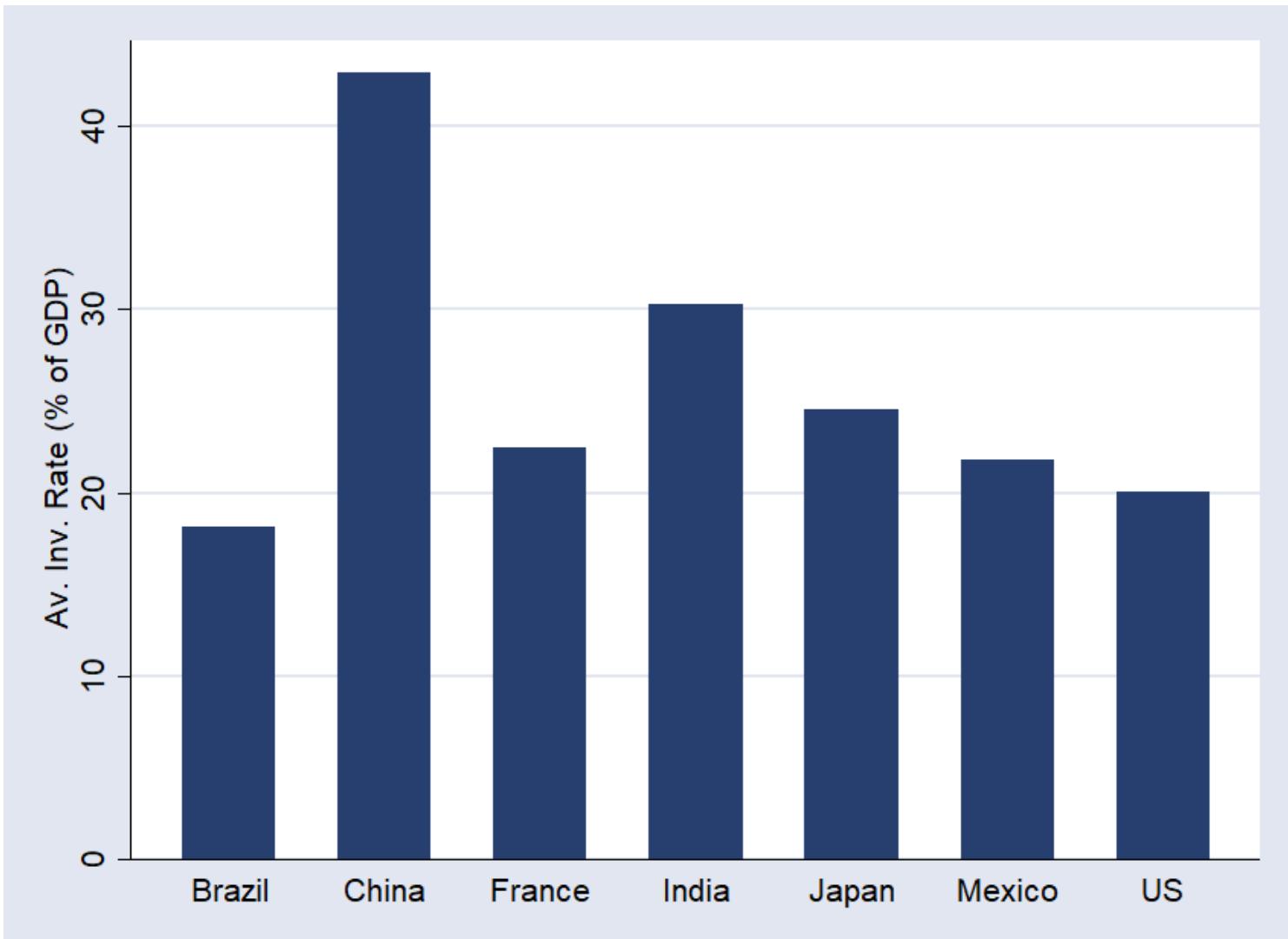
Q3: Why is inflation high in Turkey and low in EU/Japan?

Q4: What causes inflation?

Q5: How to forecast USD/TL exchange rate?

Appendix

Investment rates (% of GDP)

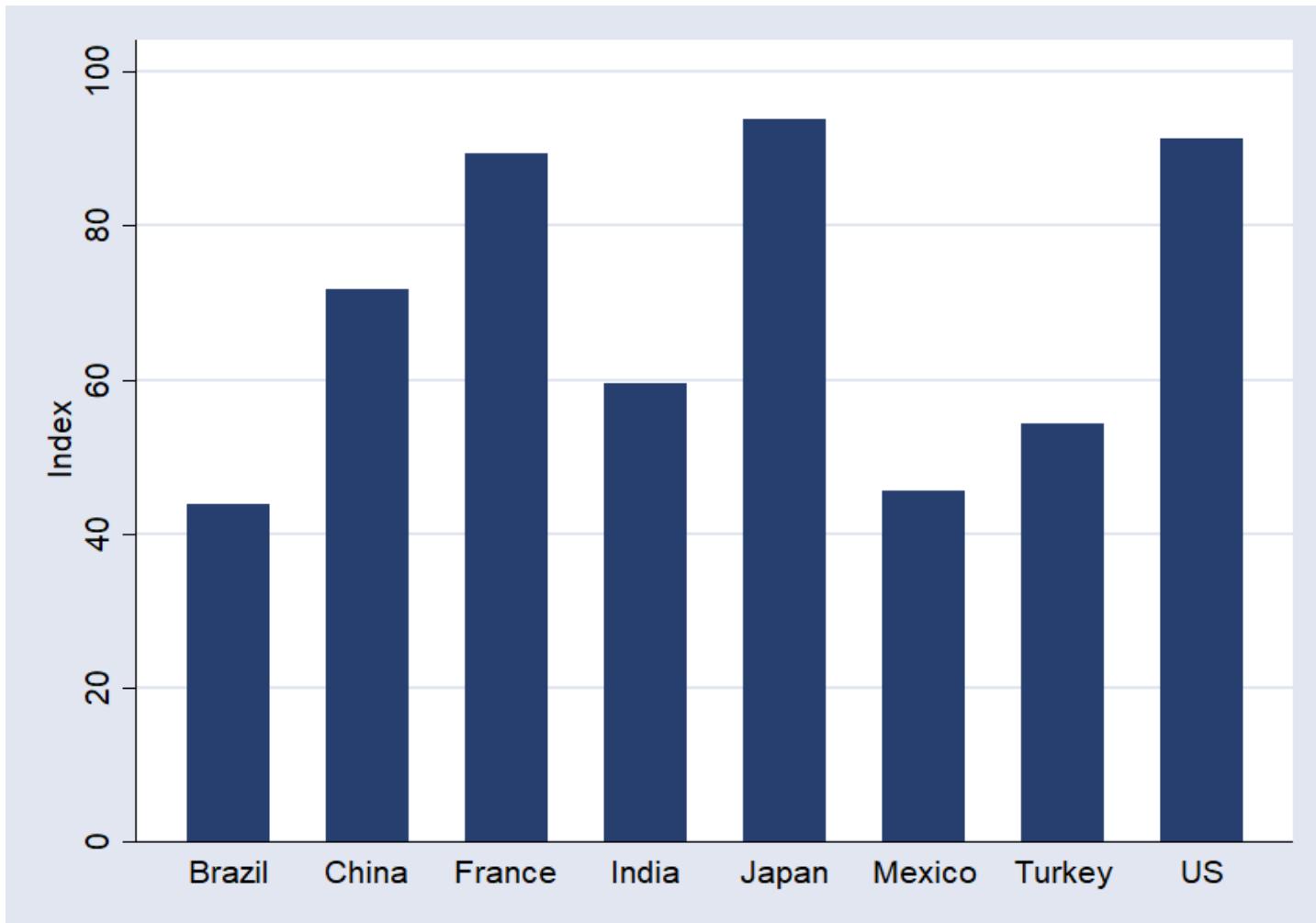


Source: International Financial Statistics, averages for 2008-2020 average.

Measures of institutional quality

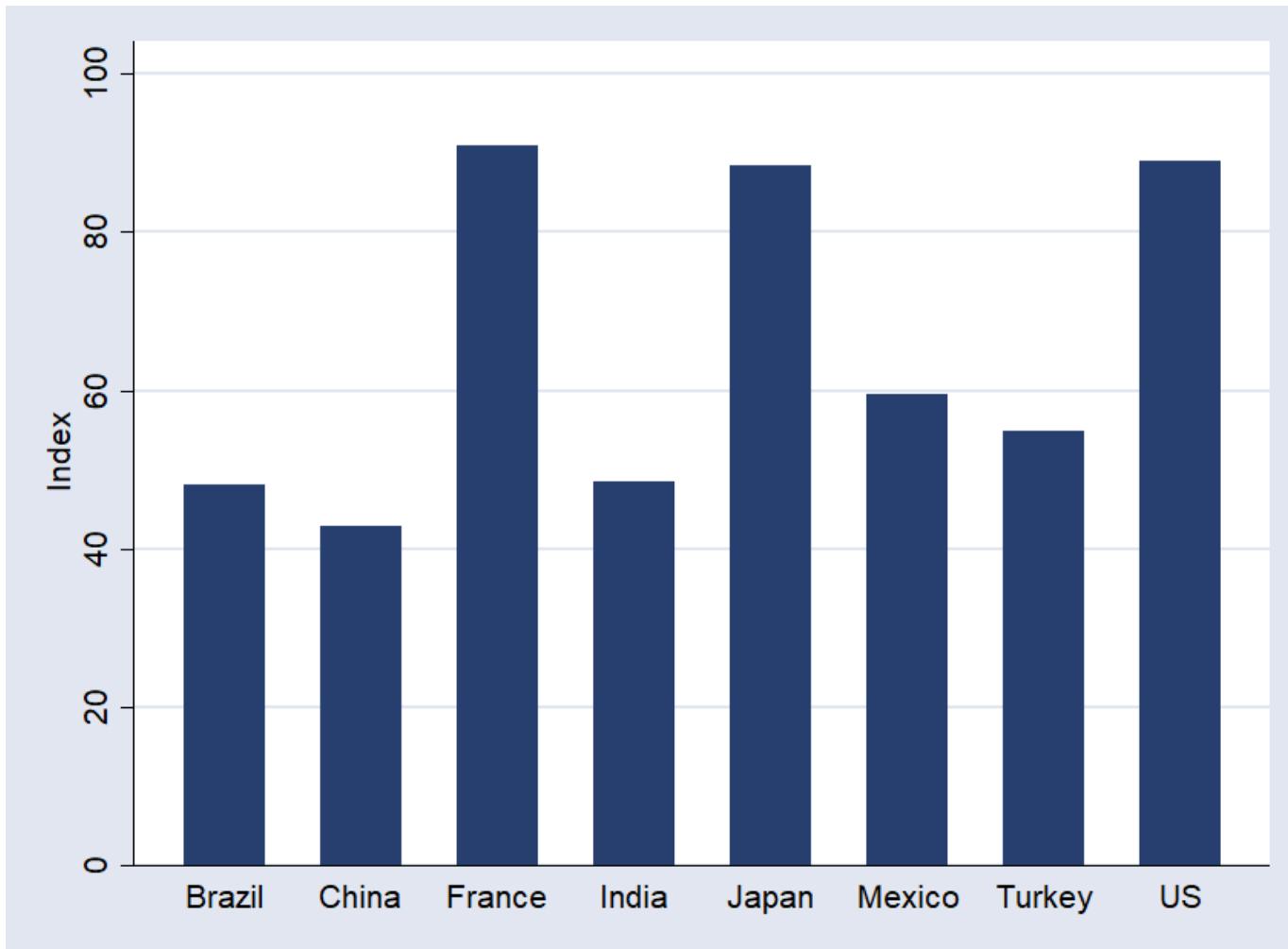
- Good sources
 - World Bank, *World Governance Indicators*
 - World Bank, *Doing Business*
 - Transparency International, corruption indexes
- Useful aggregators
 - Economist Intelligence Unit, various reports
 - World Economic Forum, *Global Competitiveness Report*

Government effectiveness



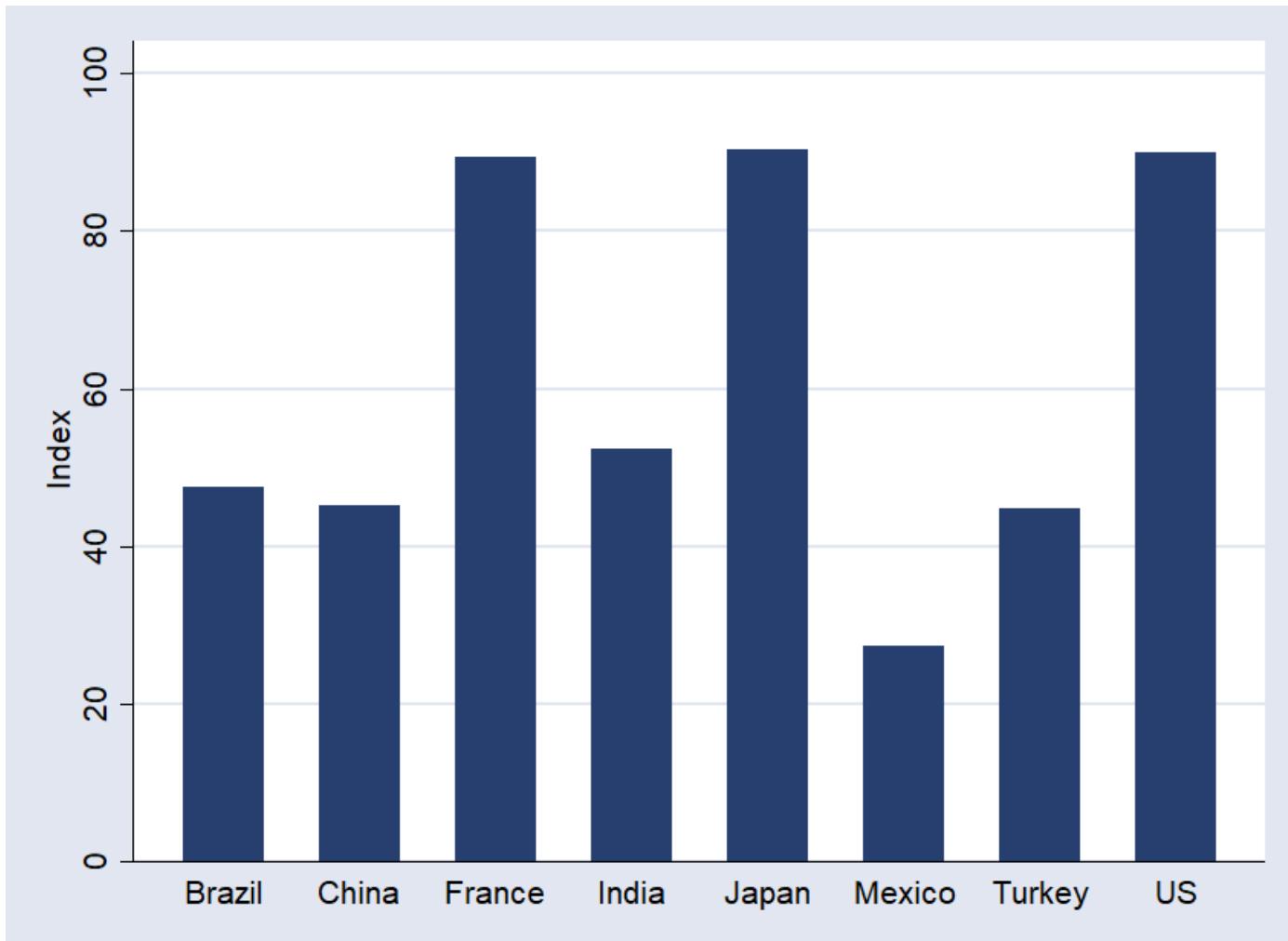
Source: World Bank, Governance Indicators. 2019

Regulatory quality



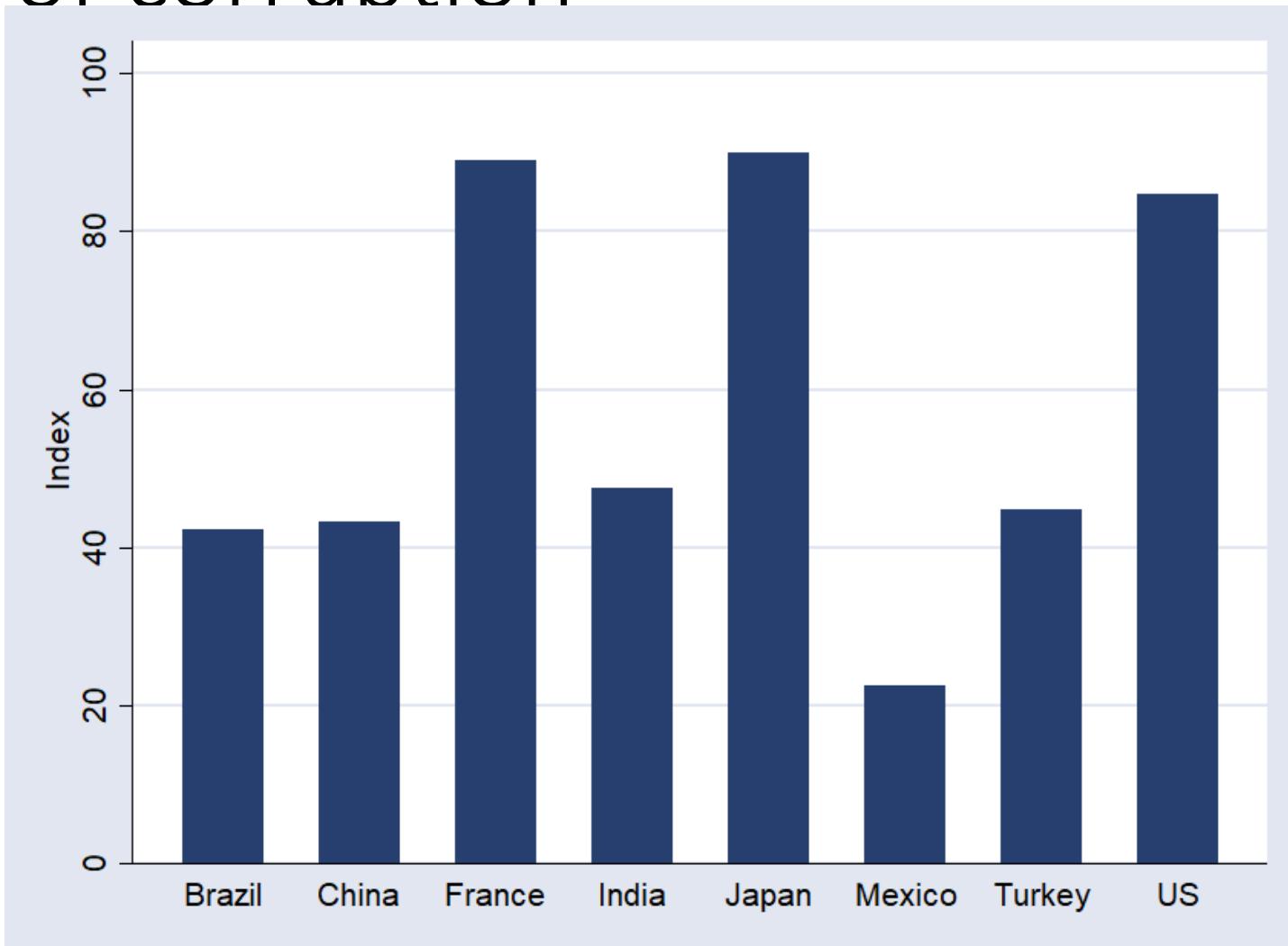
Source: World Bank, Governance Indicators. 2019

Rule of law



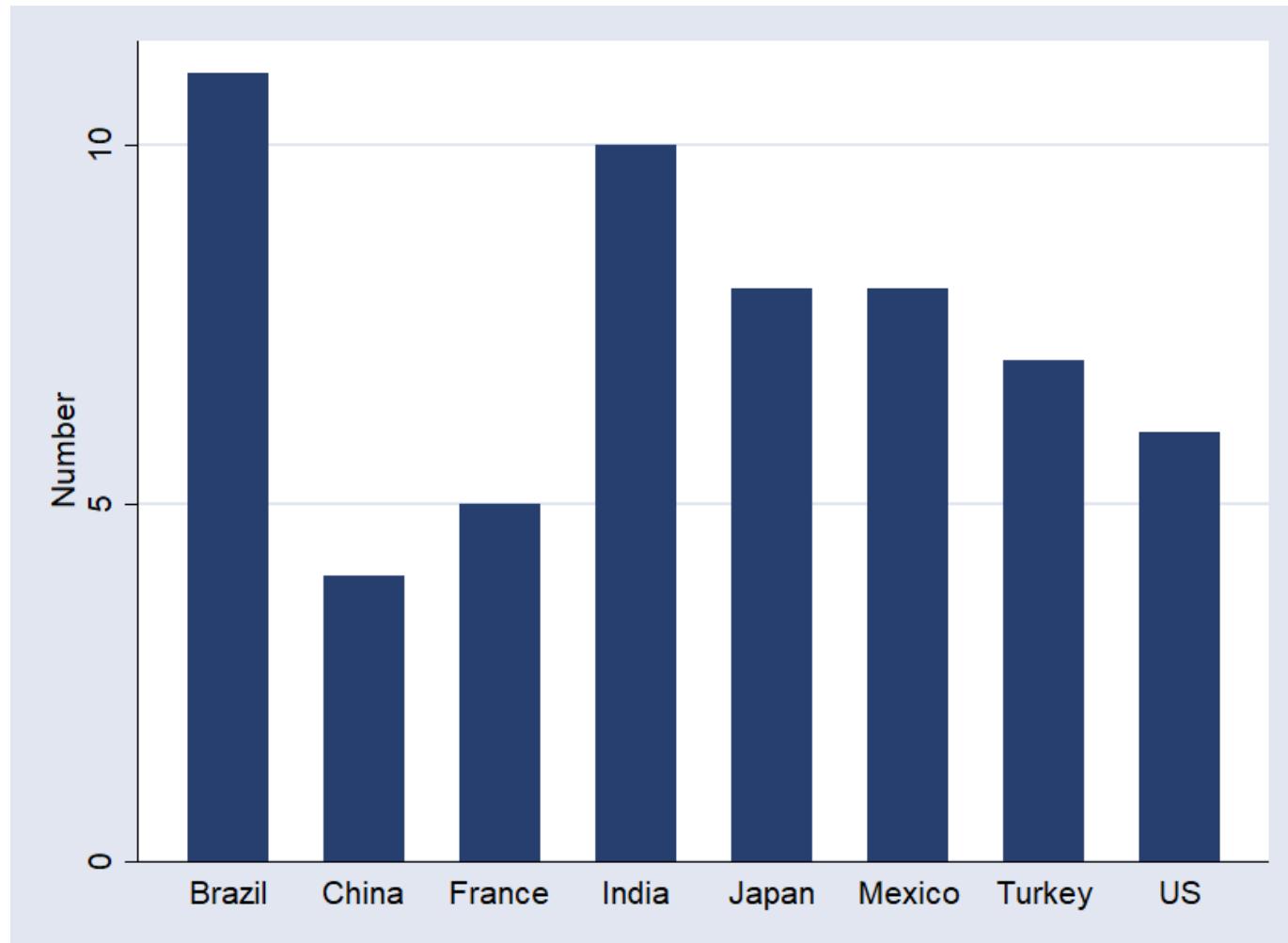
Source: World Bank, Governance Indicators. 2019

Control of corruption



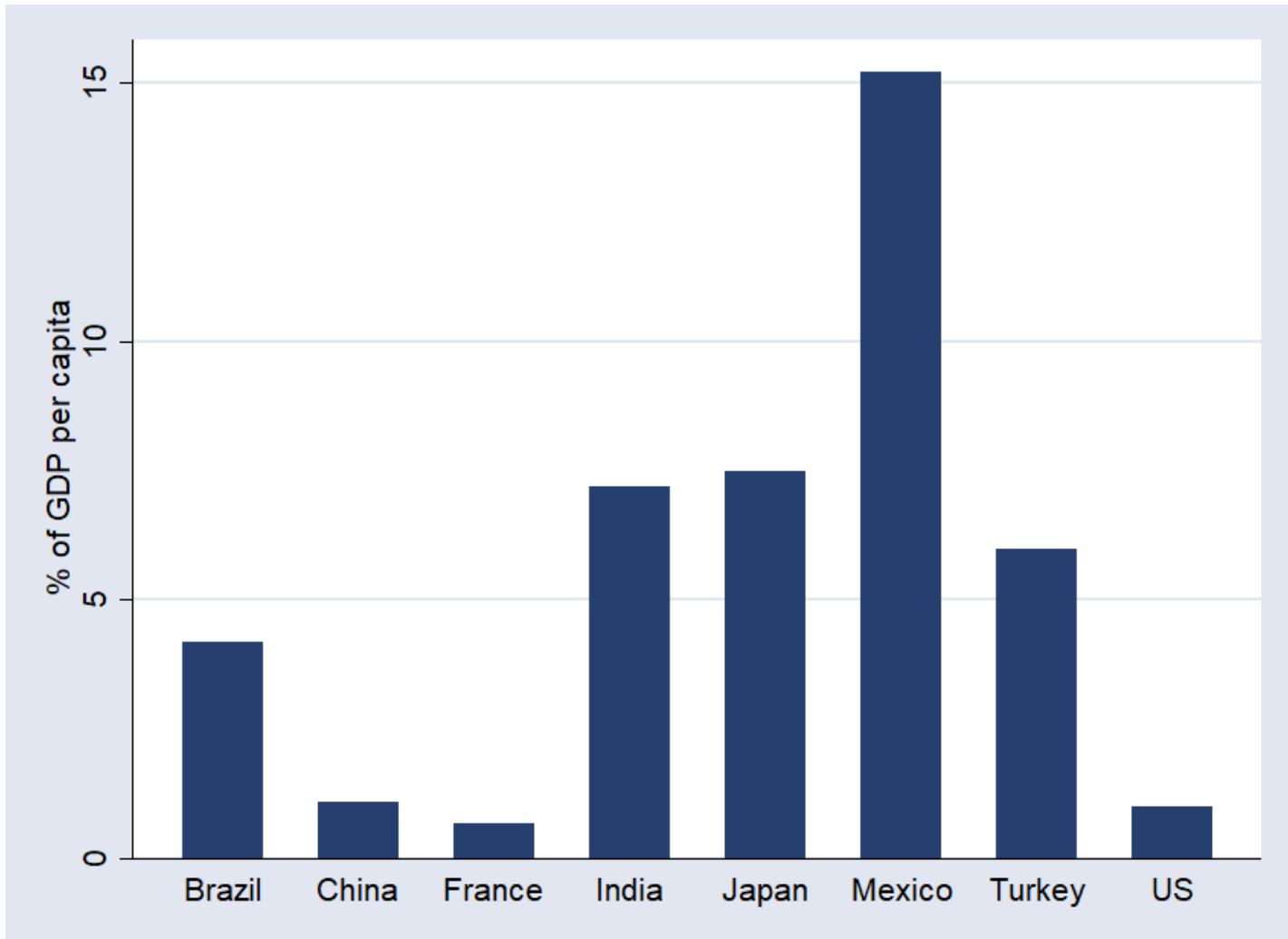
Source: World Bank, Governance Indicators. 2019

Procedures required to start a business



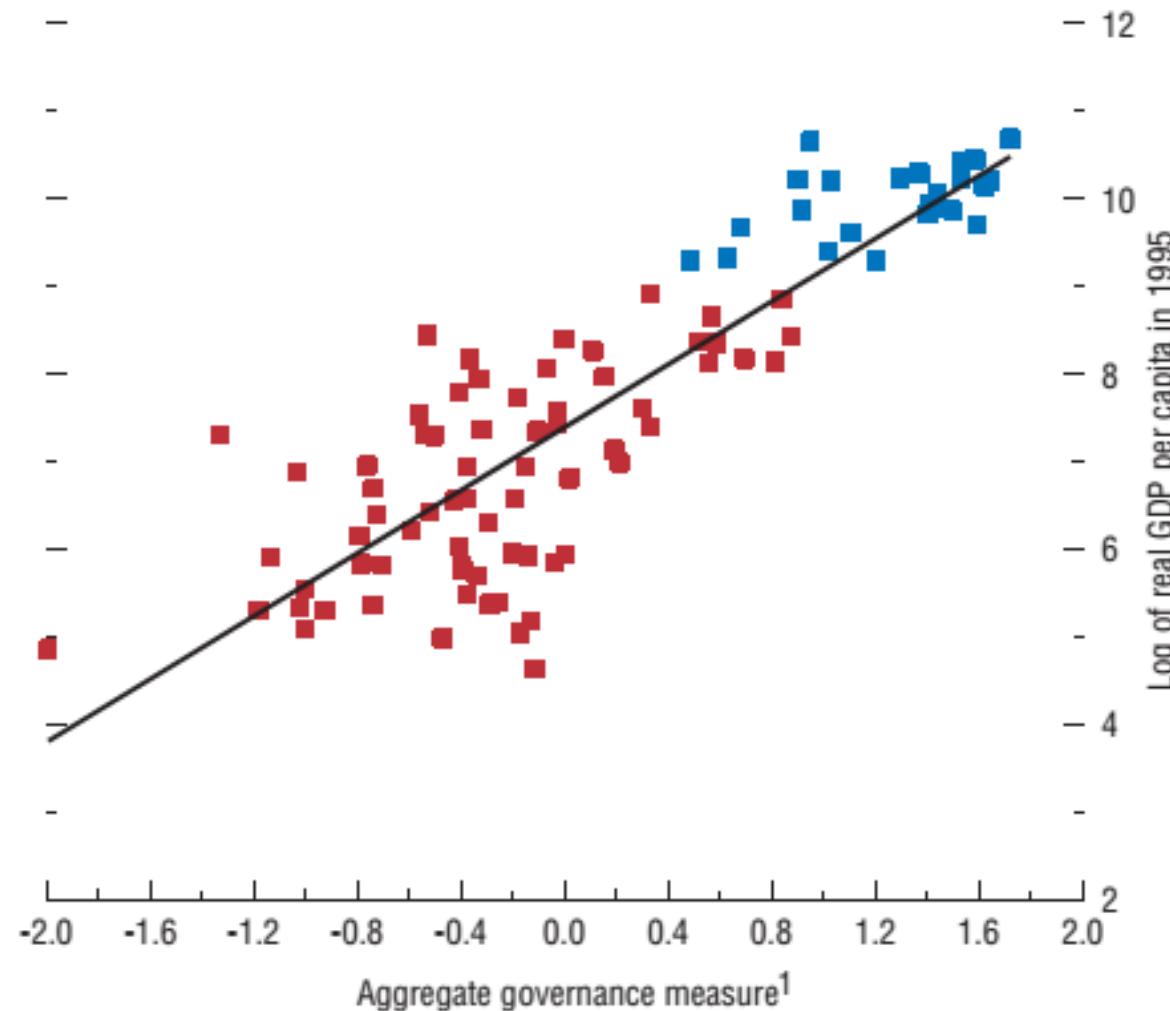
Source: World Bank, Doing Business.

Cost of starting a business



Source: World Bank, Doing Business.

Institutions and performance



Source: IMF, WEO, 2003.