LECTURE 17

EMPLOYMENT AND UNEMPLOYMENT IN THE LONG RUN

March 19, 2020

I. EMPLOYMENT AND POTENTIAL OUTPUT

  A. Our aggregate production framework

  B. Effects of an increase in N*/POP

  C. Effects of an increase in POP

II. DETERMINANTS OF THE NORMAL EMPLOYMENT-TO-POPULATION RATIO AND THE NORMAL REAL WAGE

  A. Review and modification of labor supply/labor demand diagram

  B. Application #1: Change in workers' tastes (Married women)

  C. Discussion of the paper by Claudia Goldin and Lawrence Katz

  D. Application #2: Change in labor demand (Low-skilled males)

  E. Application #3: Incentives (Marginal tax rates)

  F. Application #4: The large rise in real wages over time

III. THE NATURAL RATE OF UNEMPLOYMENT

  A. Definition and measurement of unemployment

  B. Types of unemployment and the natural rate

  C. Job rationing

  D. Job search

IV. APPLICATION: EUROPEAN UNEMPLOYMENT

  A. Facts

  B. Some candidate explanations

  C. Analysis

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March 19, 2020

Announcements

- Problem Set 4, Part 2 was posted this past Tuesday.

  - It is due Tuesday, March 31, at 2 P.M.

- Links to Zoom recordings of the lectures starting with this past Tuesday's are posted on the "announcements" section of bcourses.

- The second midterm will be held on Tuesday, April 7.

  - We will discuss the exam on March 31.

  - A sample exam will be posted on the course website this evening.

Announcements

- We will have an extra Zoom meeting today starting at 4 P.M. to discuss economic issues related to coronavirus.

V. SOURCES OF TECHNOLOGICAL PROGRESS (CONCLUDED)

Many Factors Are Likely to Affect The Amount of Invention and Innovative Activity

- The strength of inventors' property rights.

- Government subsidies or direct funding of research and innovation.

- Greater competition; lower barriers to entry.

- National emergencies.

- The scale of the market.

- Education.

- Consumer tastes for novelty.

- Cultural attitudes toward innovation.

- Luck.

- ….

Does the Free Market Produce the Efficient Amount of Inventive Activity?

- Almost certainly not: Inventions appear to have large positive externalities.

- This is especially true for basic science.

Policies to Encourage Technological Progress

- Increase education.

- Subsidize research and development, particularly for basic science.

- Make property rights more secure.

- (See the list of sources of technological progress above.)

- And remember that better institutions are a form of technological progress—which is especially relevant to poor countries.

Economics 2   Christina Romer
Spring 2020   David Romer

LECTURE 17
Employment and Unemployment in the Long Run

I. Employment and Potential Output

Aggregate Production Function

(1) $$\frac{Y^*}{POP} = \frac{Y^*}{N^*} \bullet \frac{N^*}{POP}$$

(2) $$\frac{Y^*}{N^*} = f\left(\frac{K^*}{N^*}, T\right)$$

(3) $$\frac{Y^*}{POP} = f\left(\frac{K^*}{N^*}, T\right) \bullet \frac{N^*}{POP}$$
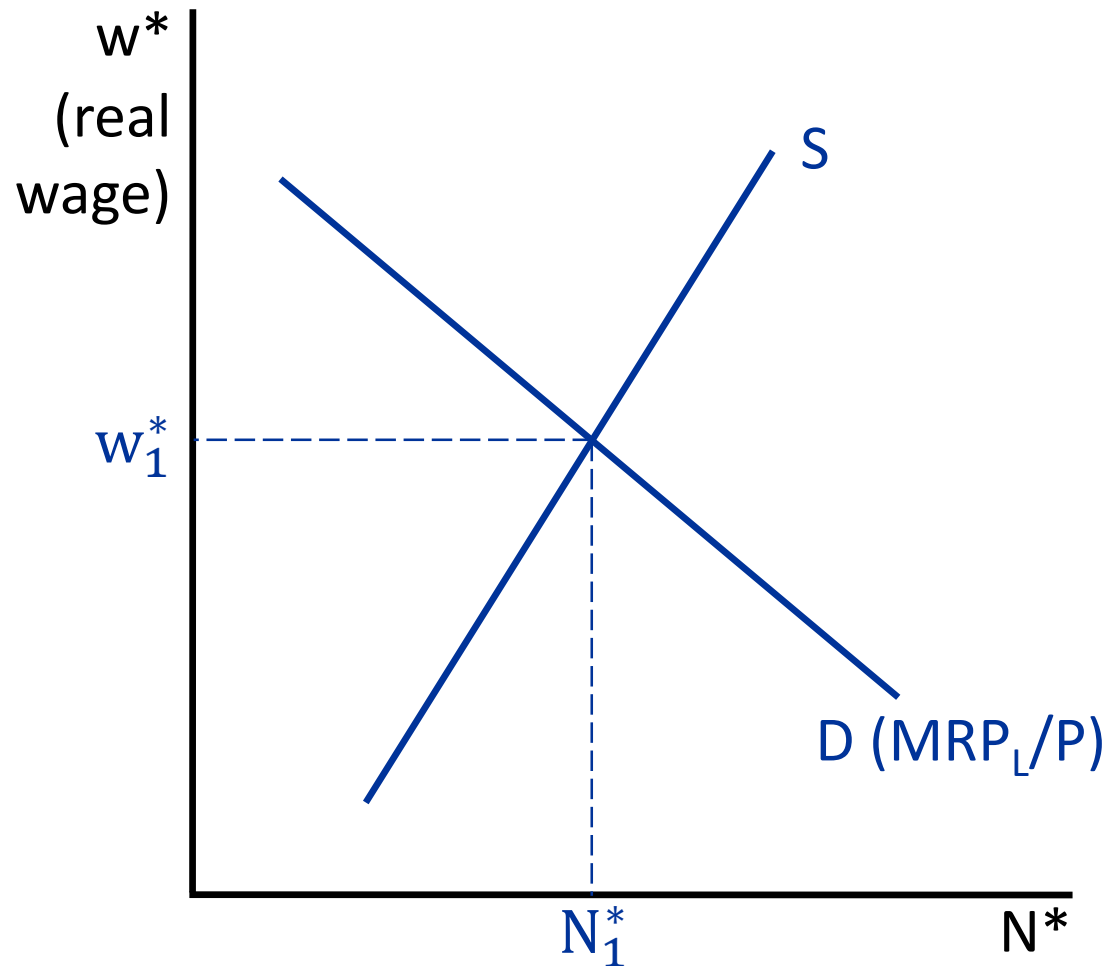
Employment and Potential Output

$$\frac{Y^*}{POP} = f\left(\frac{K^*}{N^*}, T\right) \cdot \frac{N^*}{POP}$$

- Increases in $\frac{N^*}{POP}$ will raise $\frac{Y^*}{POP}$.

- But, the effect is limited:

  - $\frac{N^*}{POP}$ can't vary very much.
  - There are countervailing effects on average labor productivity: An increase in N* tends to lower $\frac{K^*}{N^*}$.

II. DETERMINANTS OF THE NORMAL EMPLOYMENT-TO-POPULATION RATIO AND THE NORMAL REAL WAGE
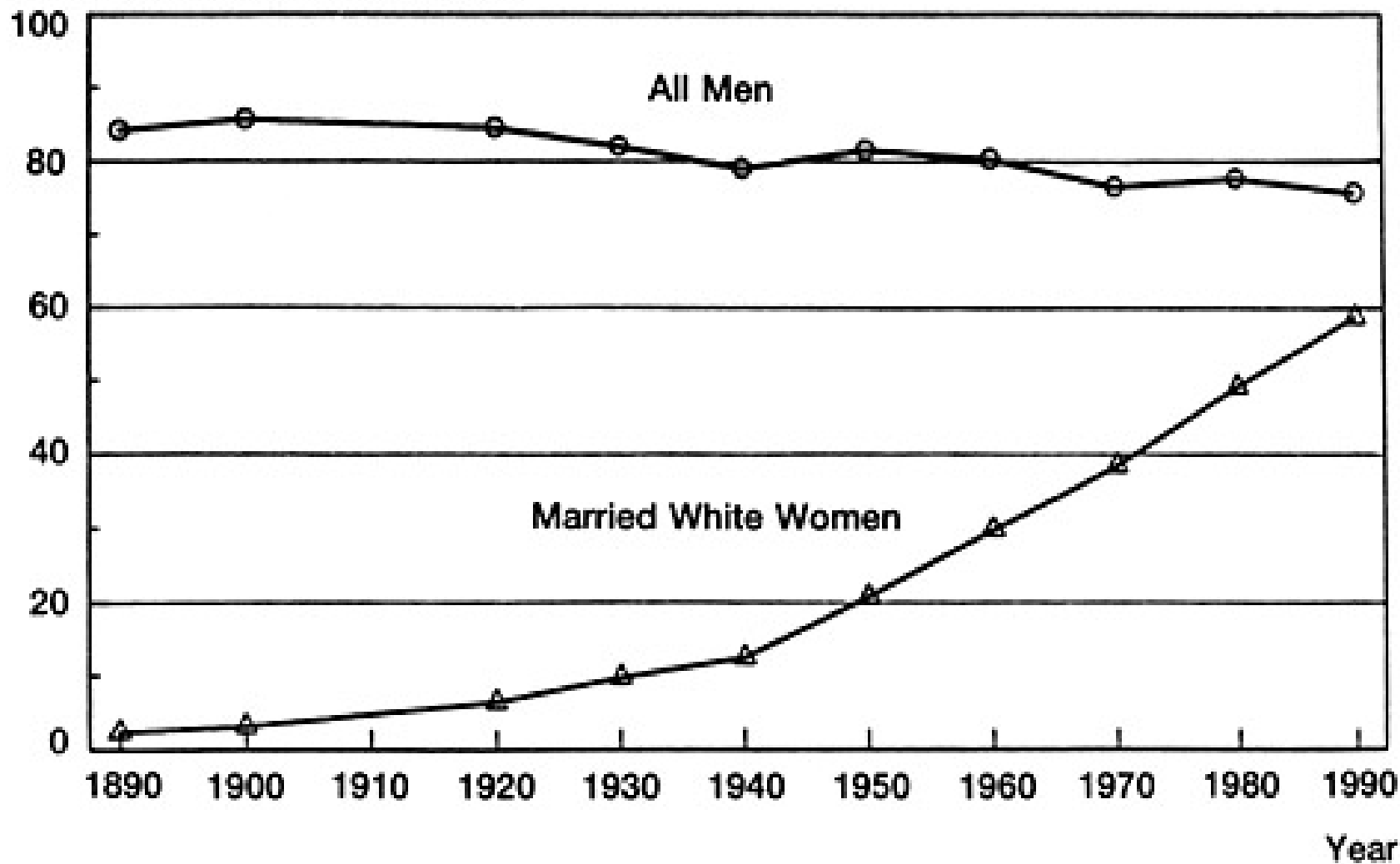
Long-Run Labor Market Diagram

Application #1: Labor Force Participation Rate, Women Ages 16+, United States, 1962–2019
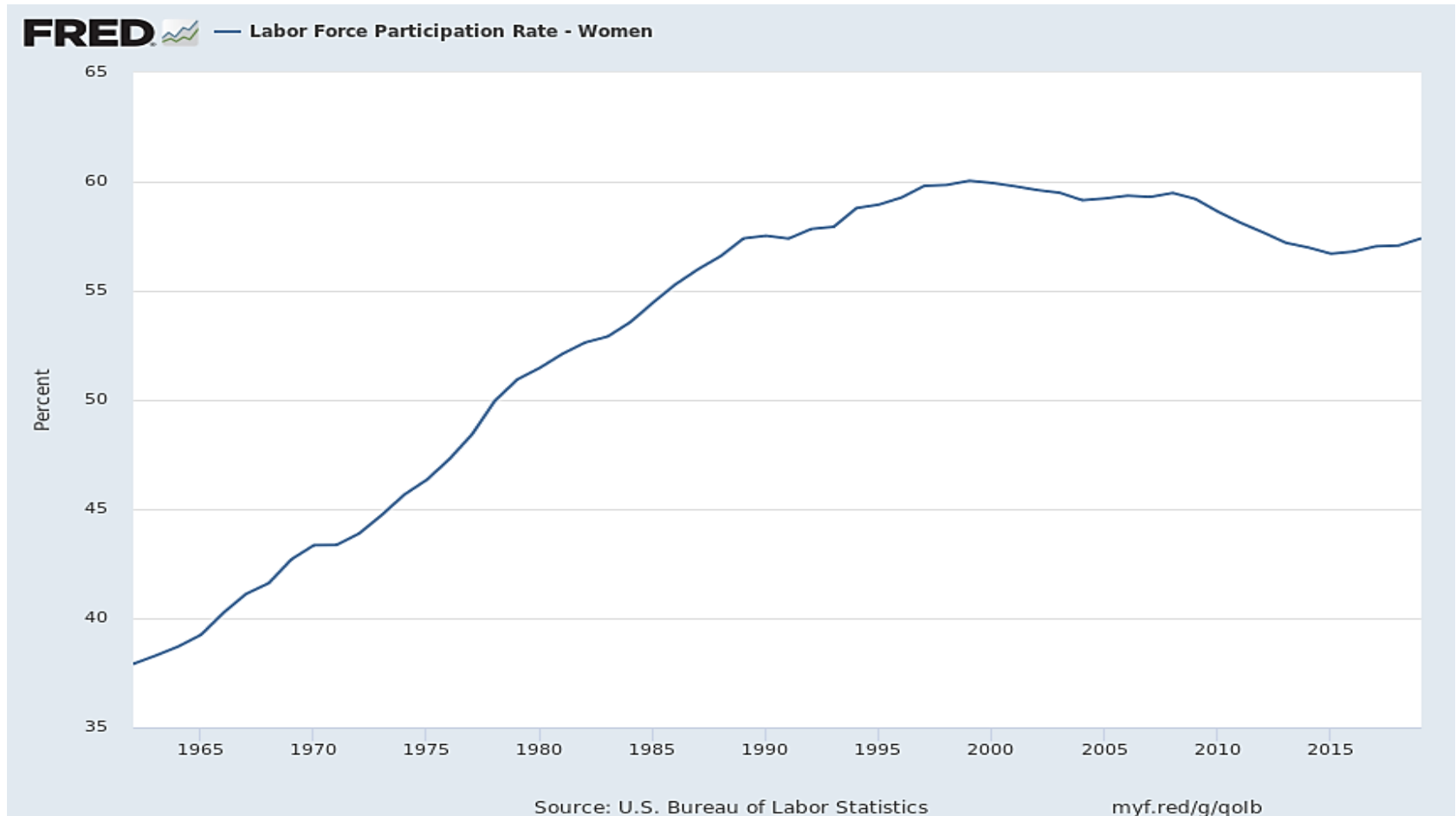
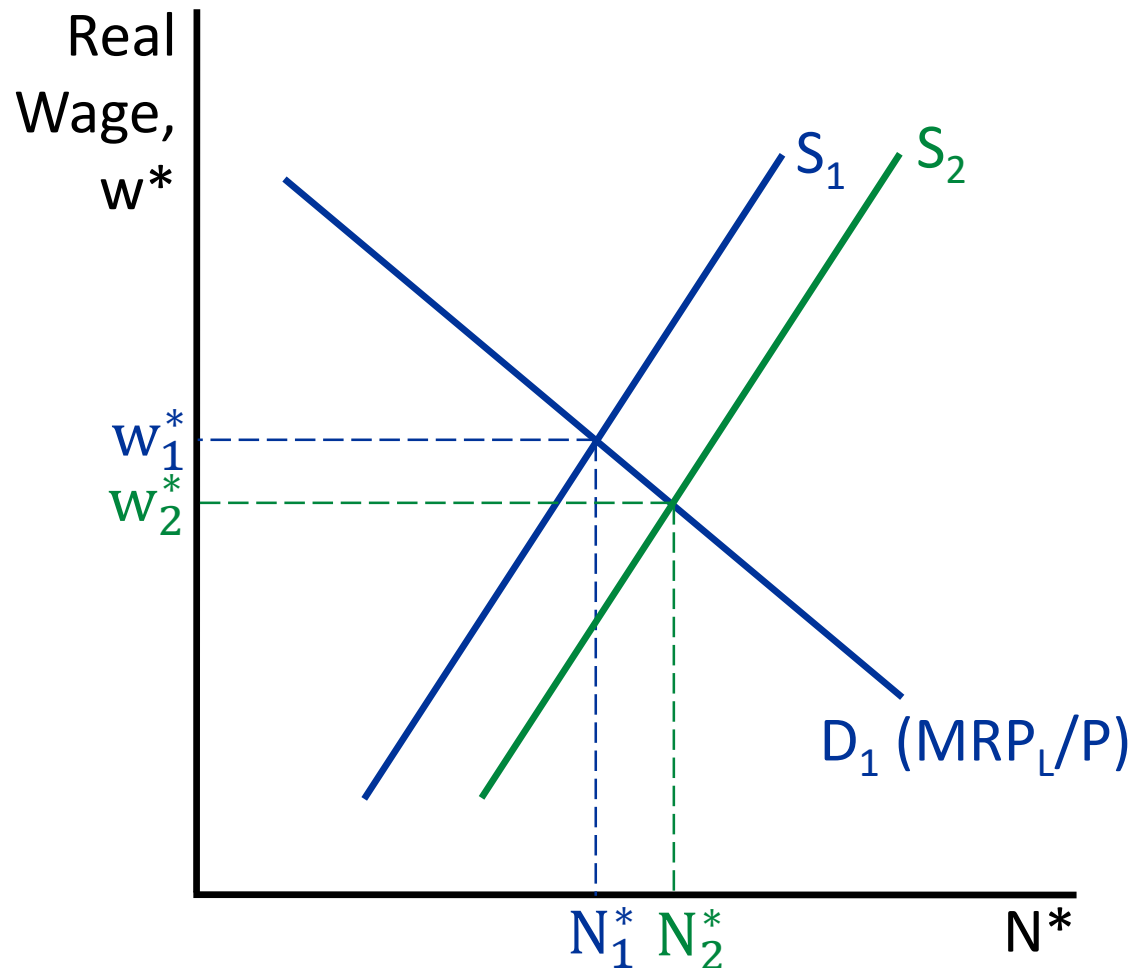Source: FRED; data from Bureau of Labor Statistics.

Labor Force Participation Rate

All Men

Married White Women

Year

Source: Claudia Goldin, "Gender Gap," *The Concise Encyclopedia of Economics*.

An Increase in Labor Supply
(Women in the U.S.)

Discussion of the Paper by Goldin and Katz

Goldin and Katz's Thesis

- The development and adoption of oral contraceptives ("the pill") was an important factor behind the rise in women's entry into professional occupations in the U.S.

- They argue that the availability of the pill lowered "the costs of long-duration professional education" both directly and indirectly.

TABLE 2
STATE LAWS REGARDING CONTRACEPTIVE SERVICES TO MINORS AND THE AGE OF MAJORITY, 1969–74

STATE	AGE OF MAJORITY			EARLIEST LEGAL AGE TO OBTAIN CONTRACEPTIVE SERVICES WITHOUT PARENTAL CONSENT		
	1969 (1)	1971 (2)	1974 (3)	1969 (4)	1971 (5)	1974 (6)
Ala.	21	21	21	21	17	17
Alaska	19	19	19	19	19	14 or 19*
Ariz.	21	18	18	21	18	18
Ark.	18[†]	18[†]	18[†]	18	14	14
Calif.	21	21	18	15	15	15
Colo.	21	21	21	21	14	14
Conn.	21	21	18	21	18	18
...						
Summary	States <20: 7	States <20: 18	States <20: 43	States ≤16: 3	States ≤16: 12	States ≤16: 27[‡]

* The state has a comprehensive family planning program that does not exclude the provision of contraceptive services to minors, but there is either no mature minor doctrine in the state or no clear decision by the state attorney general concerning the legality of such a provision.

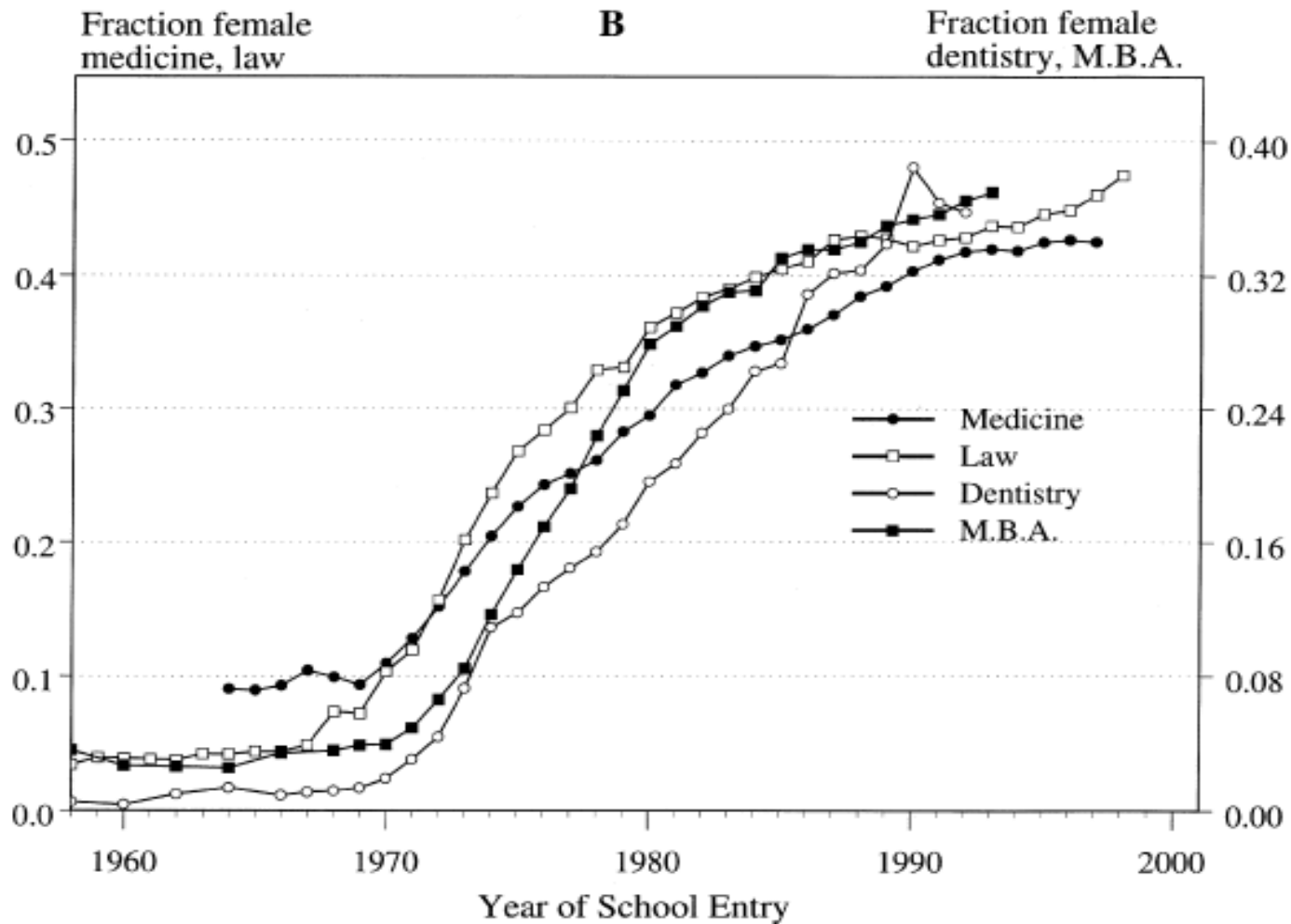[†] Age of majority is 18 for females and 21 for males.

[‡] Seven states are ambiguous cases.

Source: Goldin and Katz.

Goldin and Katz's Evidence

- Data over time.

- Data across states.

Time-Series Evidence

Source: Goldin and Katz.

Cross-State Evidence

- Their question: If we look across states, did the timing of falls in rates of early marriage line up with the timing of increased access to oral contraceptives?

- More precisely: Suppose you know the state a woman was born in, the year she was born, her race, and whether abortion was legal in her state when she was 18. Does also knowing whether the state had broad access to oral contraceptives when she was 18 improve your ability to predict whether she married before age 23?

Cross-State Evidence

TABLE 4
STATE LAWS AND THE AGE AT FIRST MARRIAGE FOR COLLEGE WOMEN (U.S. Natives Born 1935–57)
Dependent Variable: 1 = Married before Age 23

|	COLLEGE GRADUATES	SOME COLLEGE OR MORE
	(2)	(9)
Nonrestrictive birth control law at age 18*	−.0162 (.00762) [.0105]	
Pill access by age 17[†]		−.0240 (.00872) [.00143]
Pill access by ages 18–20[‡]		−.0132 (.00593) [.00676]
Legalized abortion at age 18[§]	−.0236 (.00992) [.0103]	−.00904 (.00761) [.00705]

Source: Goldin and Katz.

Were You Persuaded by Goldin and Katz?

Application #1: Labor Force Participation Rate, Women Ages 16+, United States, 1962–2019
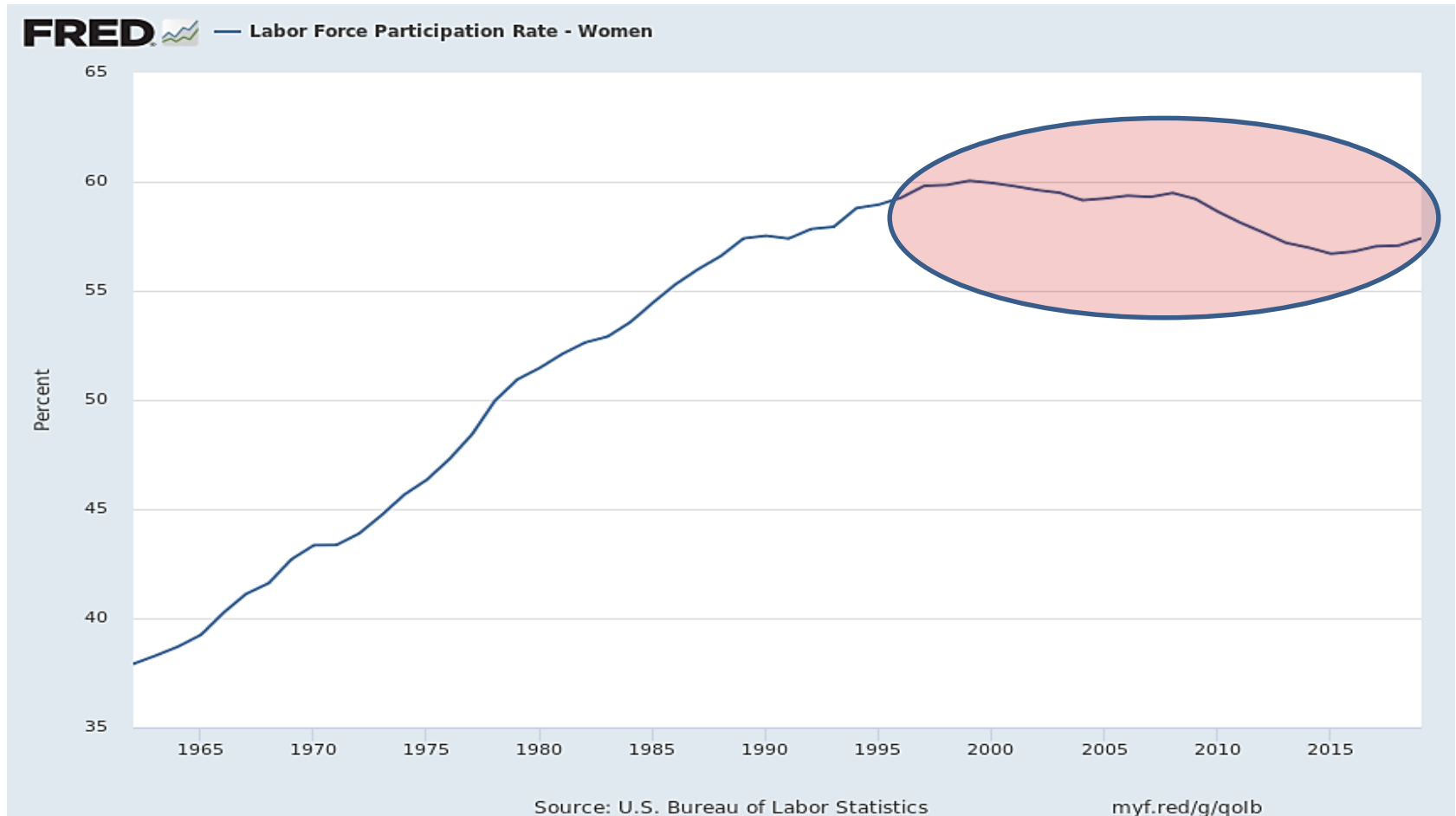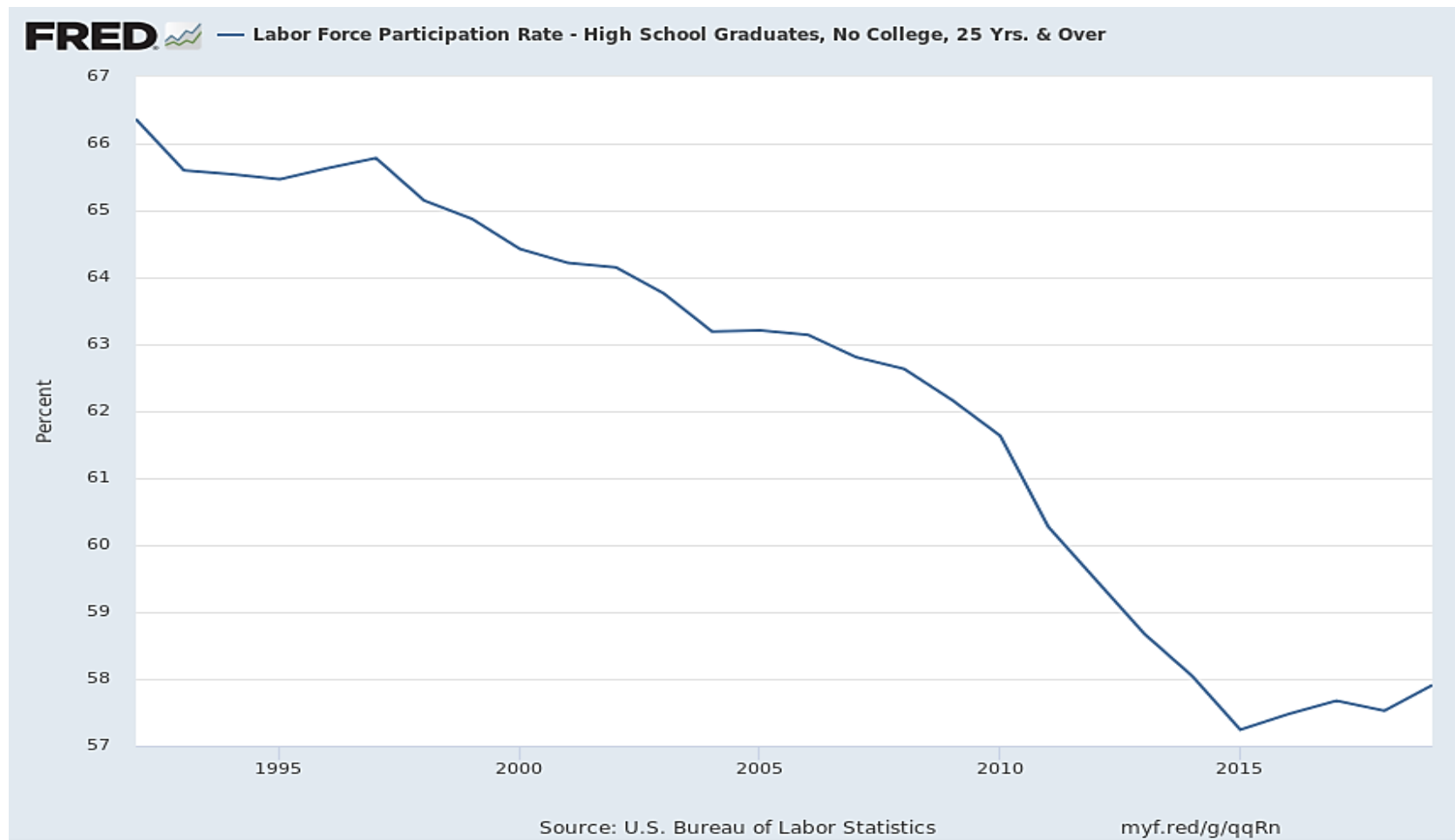

Source: FRED; data from Bureau of Labor Statistics.

Labor Force Participation Rate, Women Ages 15–64, U.S., U.K., and Japan, 1971–2016
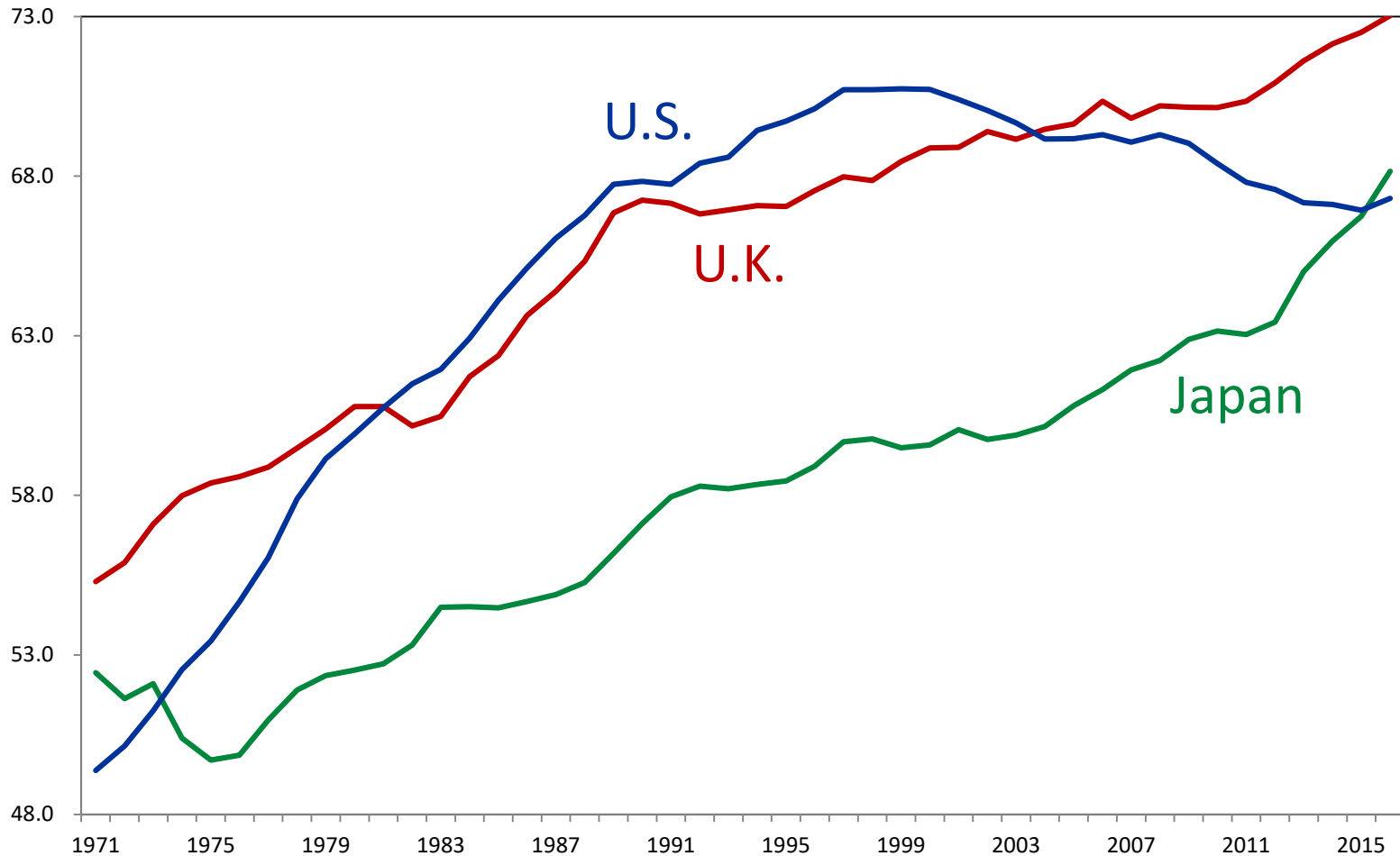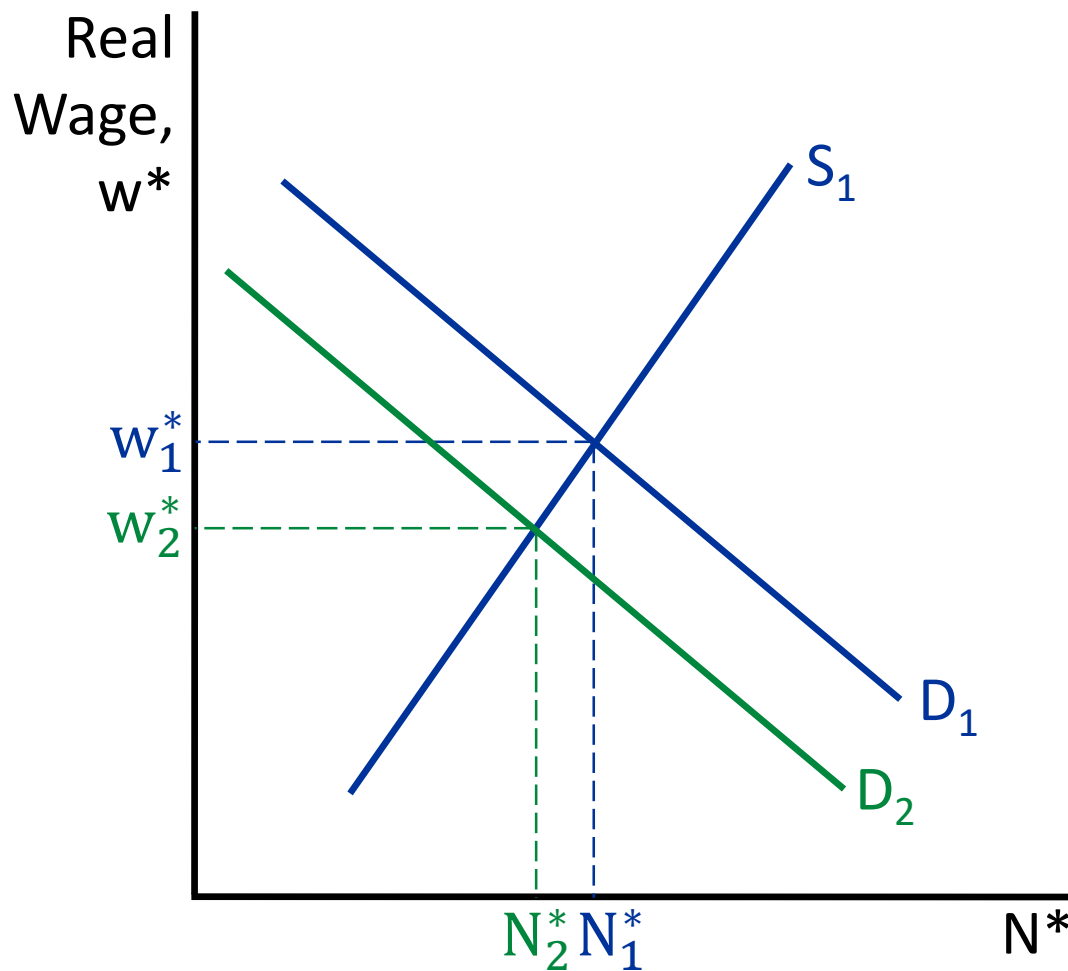
Application #2: Labor Force Participation Rate – High School Graduates, No College, Men Ages 25+, 1992–2019

Source: FRED; data from Bureau of Labor Statistics.

A Fall in Labor Demand (Less Educated Men)

Application #3: Incentives and Average versus Marginal Income Tax Rates

- Average tax rate: Total income tax/total income.

- Marginal tax rate: The tax paid on an additional dollar of income.

Example

- Consider a family earning $50,000.

- Initially: $25,000 of income is tax-exempt because of various deductions, the rest is taxed at 40%.

  - Average tax rate: 40%•($50,000 − $25,000)/$50,000 = $10,000/$50,000 = 20%.
  - Marginal tax rate: 40%.

- Now suppose there's tax reform: Eliminates $15,000 of deductions, lowers tax rate on rest of income to 25%.

  - Average tax rate: 25%•($50,000 − $10,000)/$50,000 = $10,000/$50,000 = 20%.
 - Marginal tax rate: 25%.

Labor Supply When There Are Taxes

- Think of a household choosing between leisure and everything else that it likes.

- Recall: Condition for utility maximization:

$$\frac{MU_{Leisure}}{P_{Leisure}} = \frac{MU_{Everything\ Else}}{P_{Everything\ Else}}$$

- What is $P_{Leisure}$? That is, what is the opportunity cost to the household of consuming 1 more unit of leisure?

- $P_{Leisure} = (1 - t) \bullet wage$, where t is the **marginal** tax rate.

A Reduction in the Marginal Tax Rate
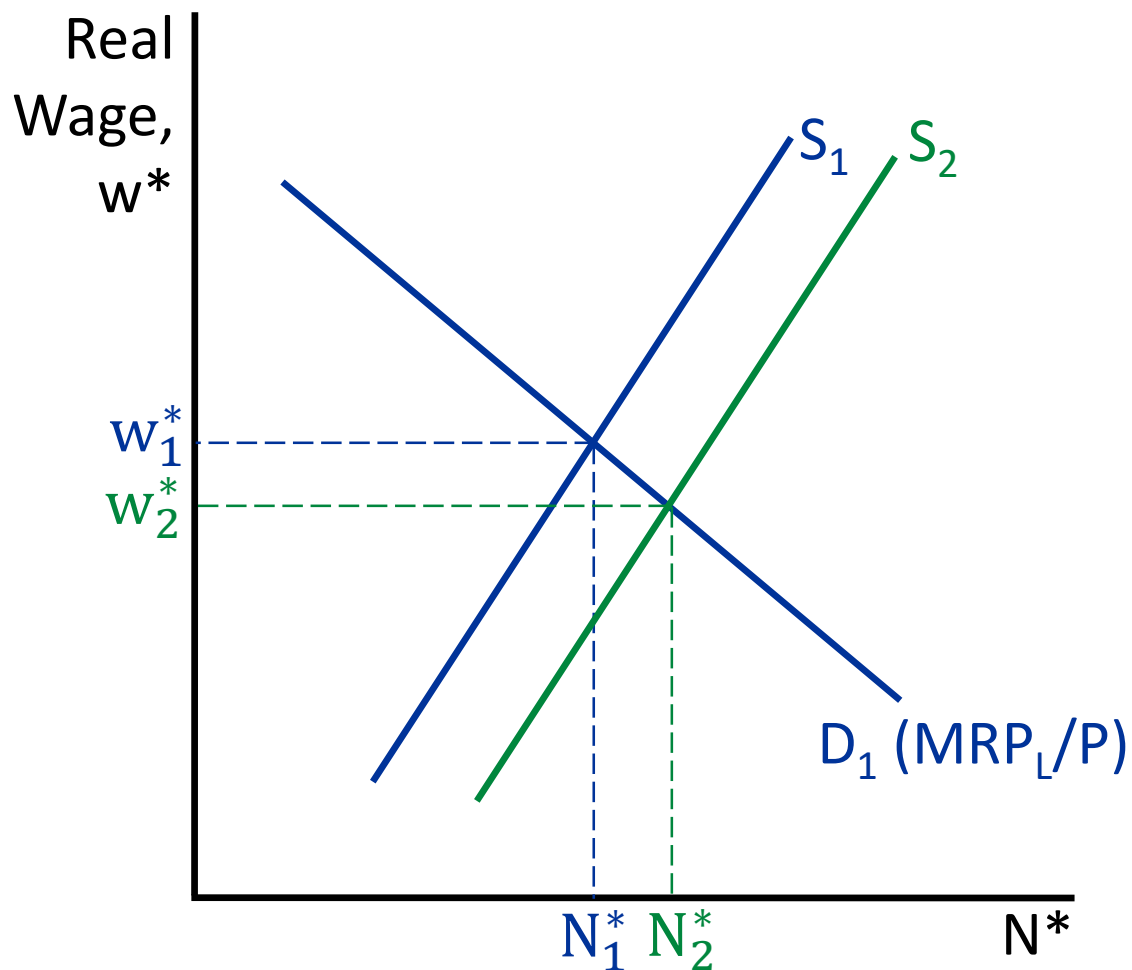
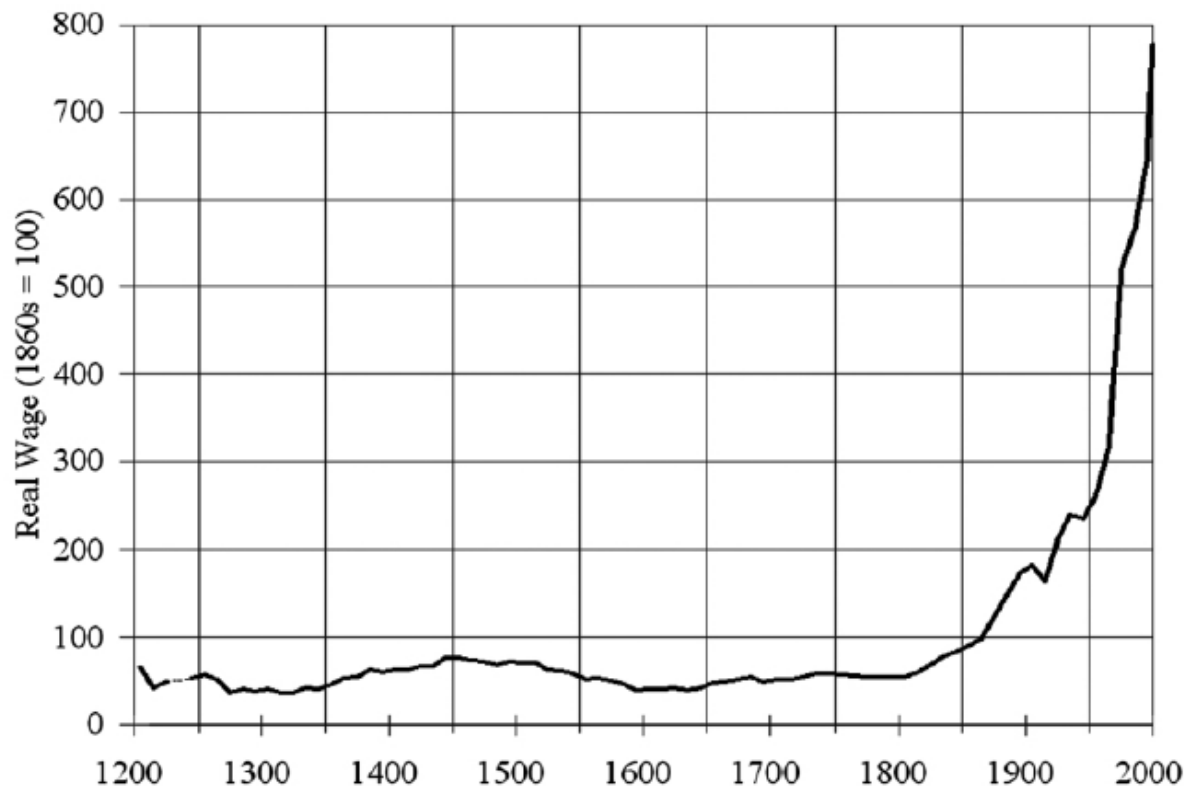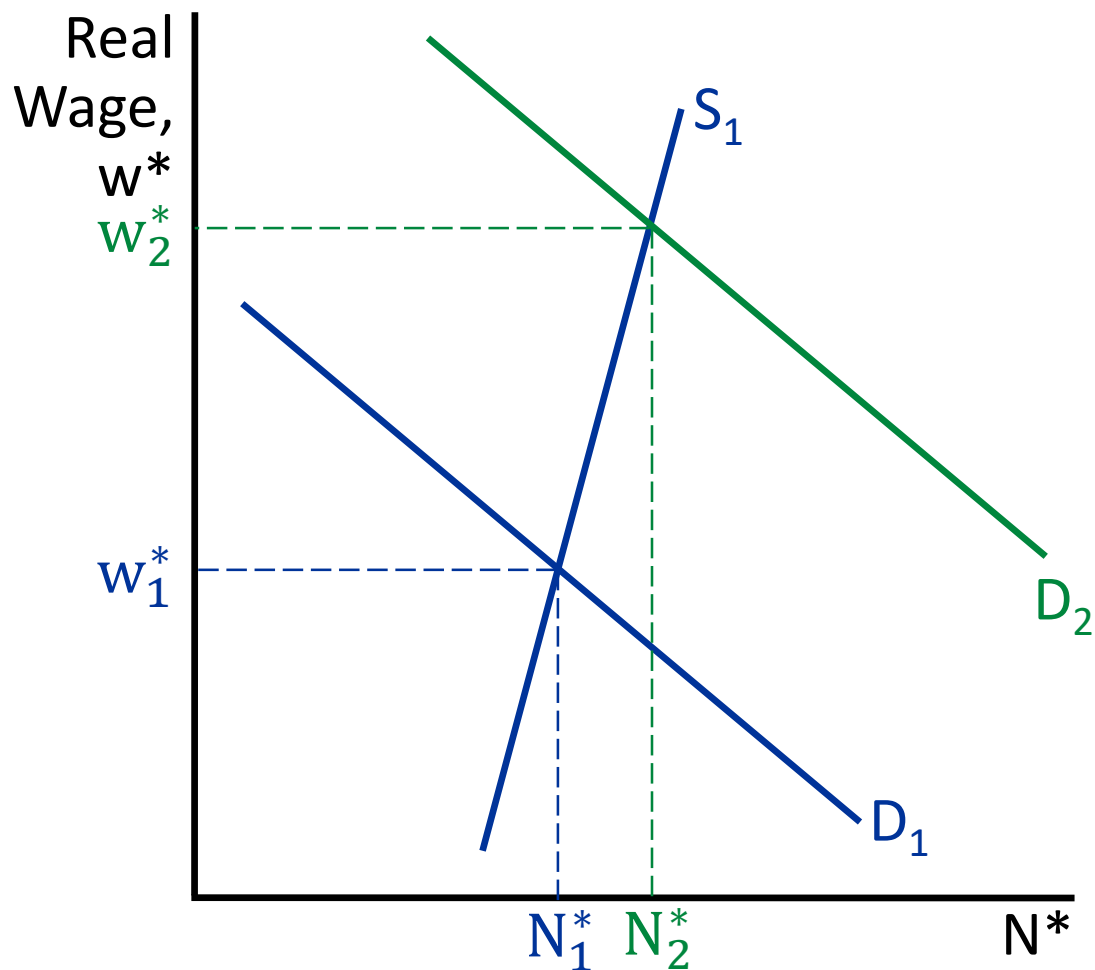# Application #4: Real Wages over the Very Long Run

Fig. 1.—Builders' real day wages, 1209–2004 (source: table A2)

From: Clark, "The Condition of the Working Class in England, 1209-2004"

Large Increases in Capital and Improvements in Technology

III. THE NATURAL RATE OF UNEMPLOYMENT

Definitions

- Unemployed: The number of people who are not working and who are actively looking for work.

- Employed: The number of people who are working.

- Labor force: Employed + unemployed.

- Unemployment rate:

$$u = \frac{\text{Unemployed}}{\text{Labor force}} \bullet 100.$$

The Natural Rate of Unemployment

- The economy's normal or usual unemployment rate.

- The natural rate of unemployment is more than zero.

The U.S. Unemployment Rate, 1948–2020

Shaded areas indicate U.S. recessions   Source: U.S. Bureau of Labor Statistics   myf.red/g/qi9T

Source: FRED; data from Bureau of Labor Statistics.

Unemployment in the U.S., France, and Japan

Source: Organization for Economic Co-operation and Development   myf.red/g/qrjr
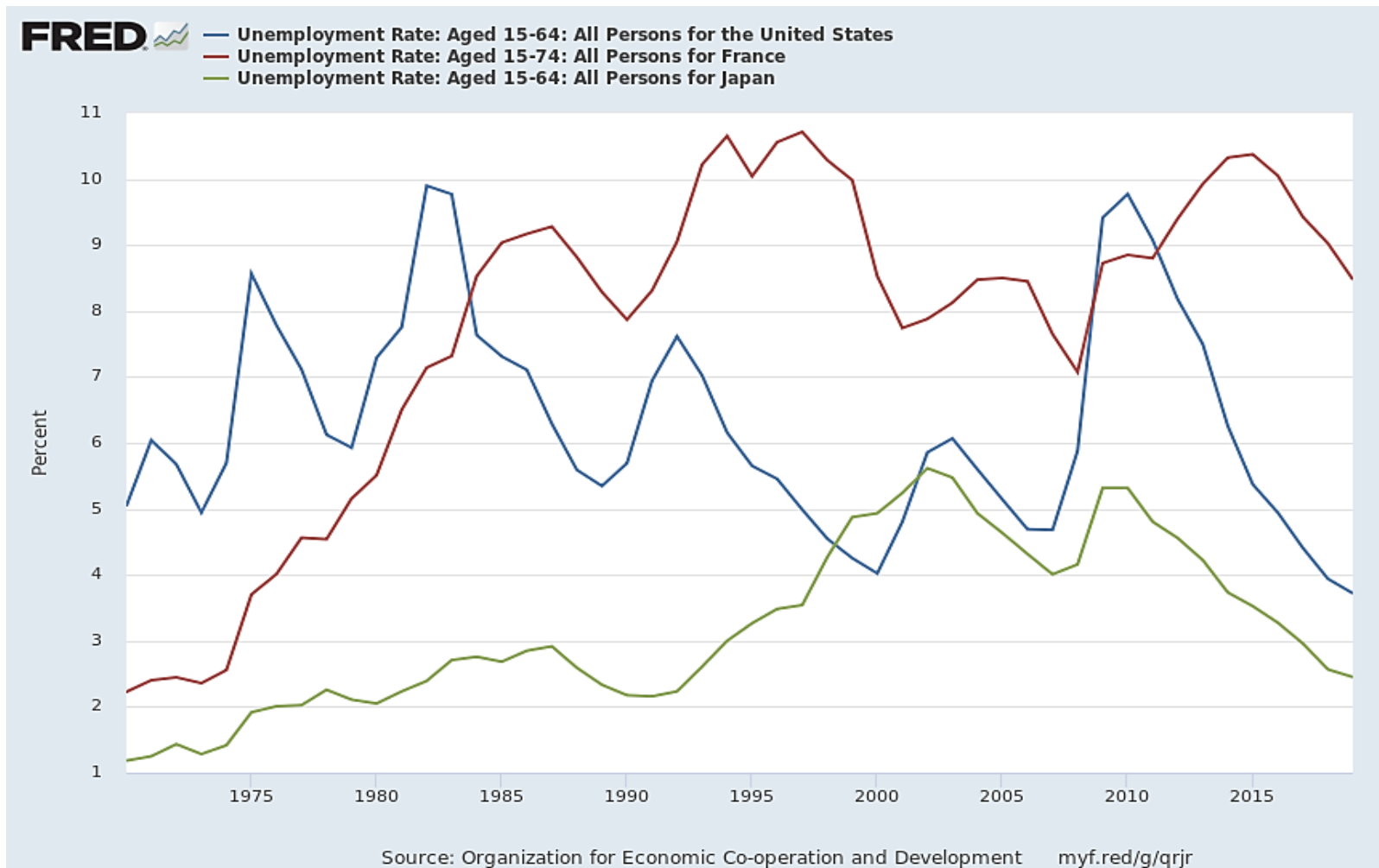
Source: FRED; data from the OECD.

Types and Sources of Unemployment

- Cyclical unemployment

  - Caused by output being below potential

- Structural unemployment

  - Caused by job rationing

- Frictional unemployment

  - Caused by turnover and job search

Normal or natural unemployment consists of structural and frictional unemployment.

Job Rientation

Real Wage, w^*

$\bar{w}$

w_1^*

S

D (MRP_L/P)

N_D^* N_1^* N_S^*

N^*

Structural unemployment
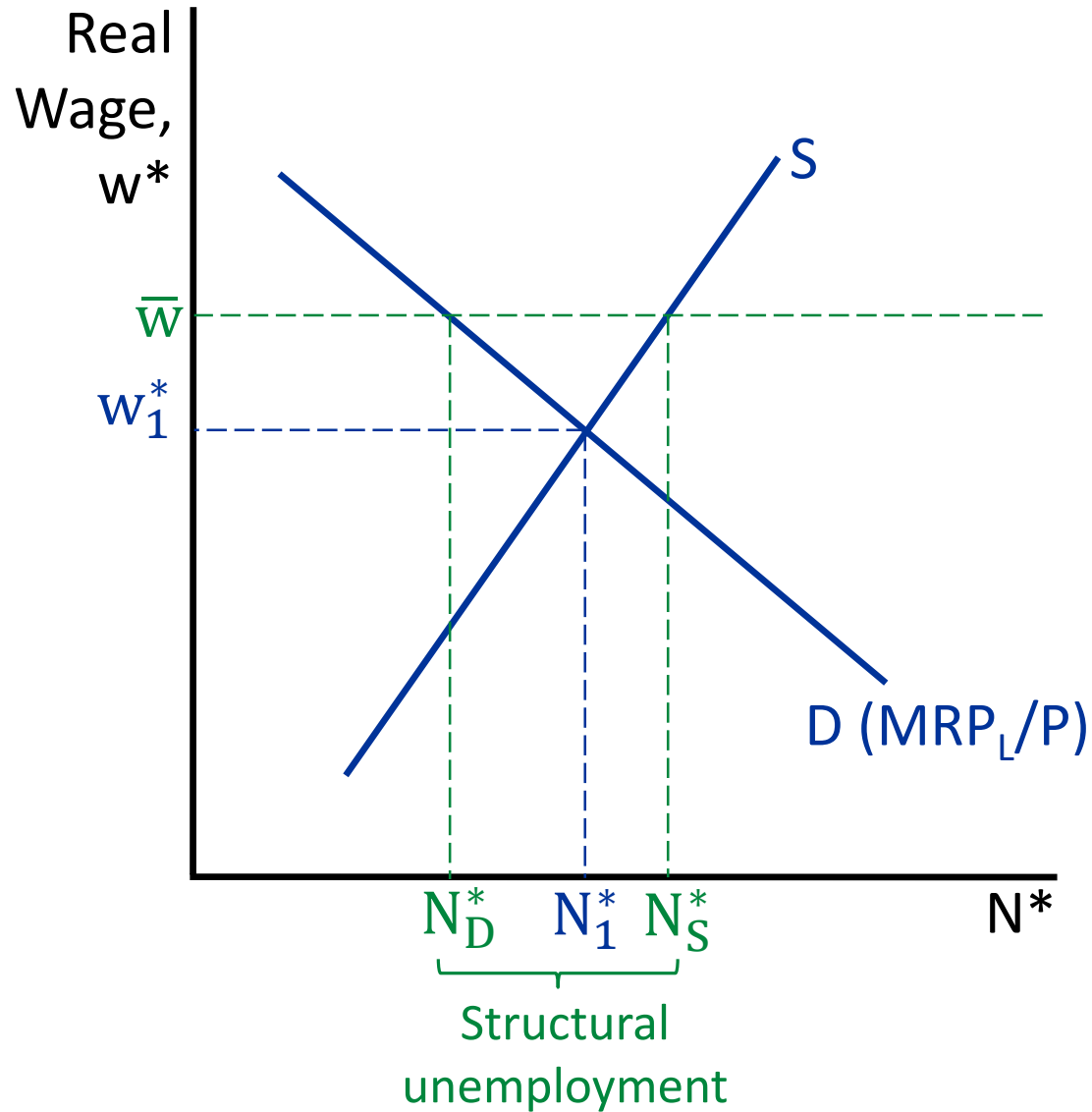
Sources of Job Rationing
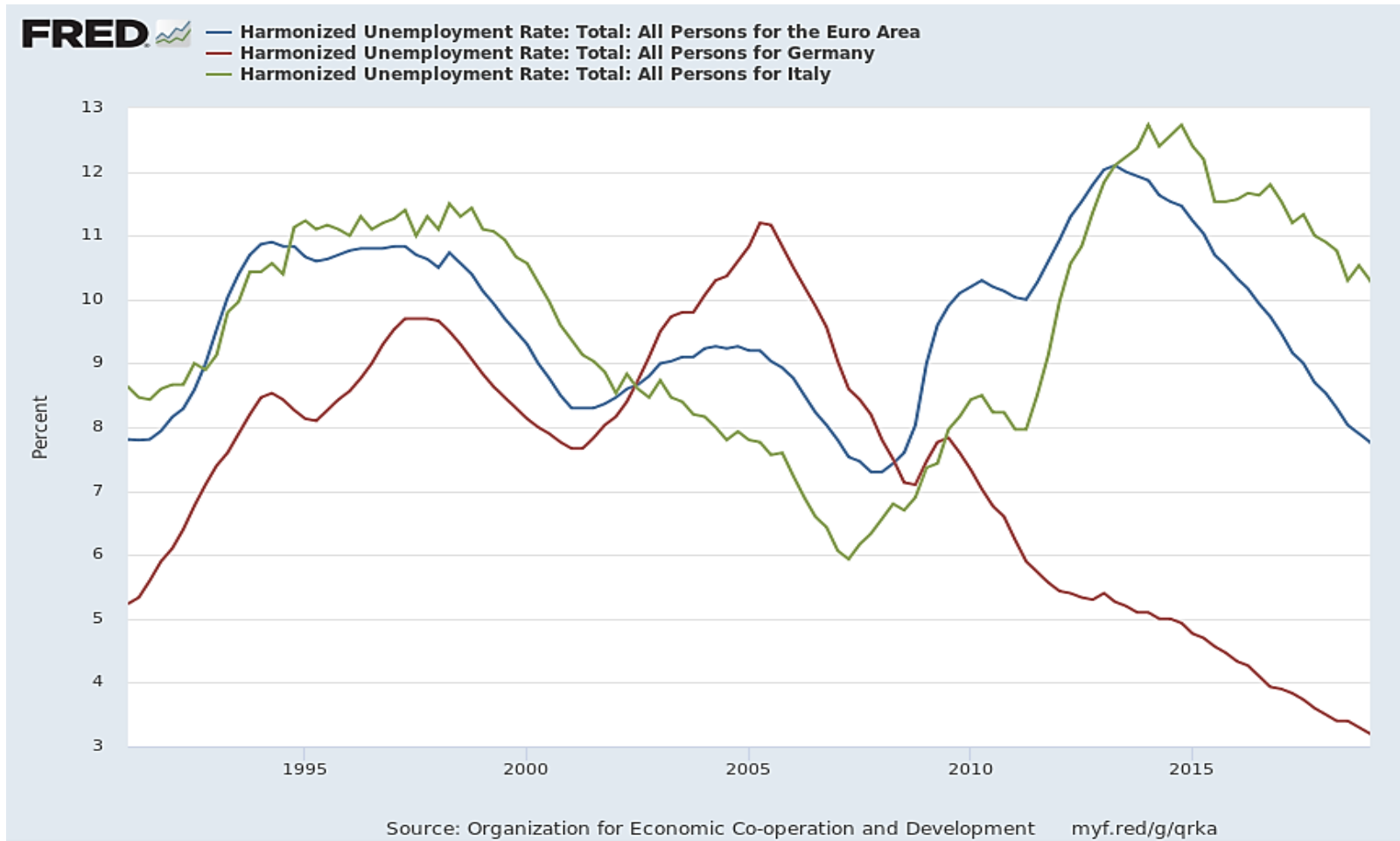
- Minimum wage laws

- Unions

- Efficiency wages

Frictional Unemployment

- It takes time to match workers and jobs.

- At the micro level, the economy is constantly changing.

- As a result, at any time there are both unemployed workers and job vacancies.

- This process is sometimes described as "churn."

IV. APPLICATION OF OUR LONG-RUN LABOR MARKET FRAMEWORK: EUROPEAN UNEMPLOYMENT

Unemployment in the Euro Area, Germany, and Italy

Source: Organization for Economic Co-operation and Development   myf.red/g/qrka

Source: FRED; data from the OECD.

FIGURE II

Average Length of Unemployment
(2002, in months)

Mexico 1.9 · United States 3.8 · Norway 4.0 · Canada 4.3 · Australia 7.1 · Finland 10.5 · France 12.8 · Switzerland 14.0 · Poland 15.5 · Hungary 15.8 · Slovak Republic 16.5 · Spain 19.0 · Czech Republic 20.3
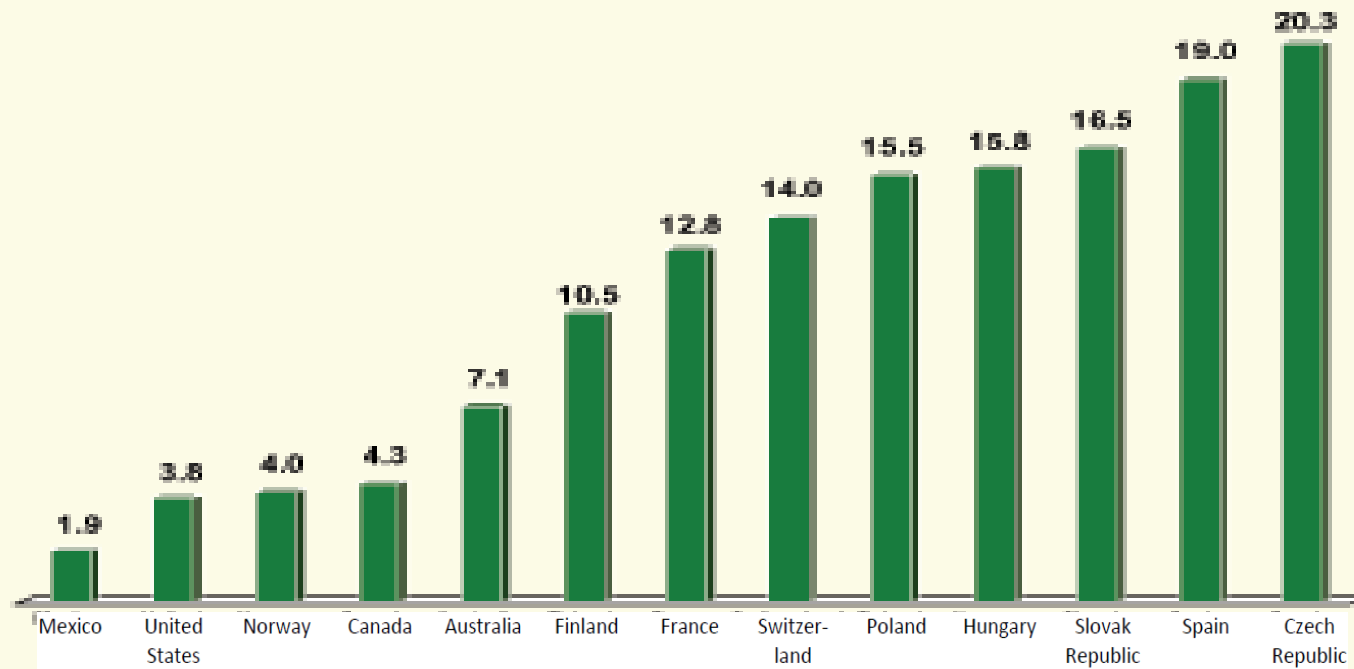
Source: Organization for Economic Cooperation and Development.

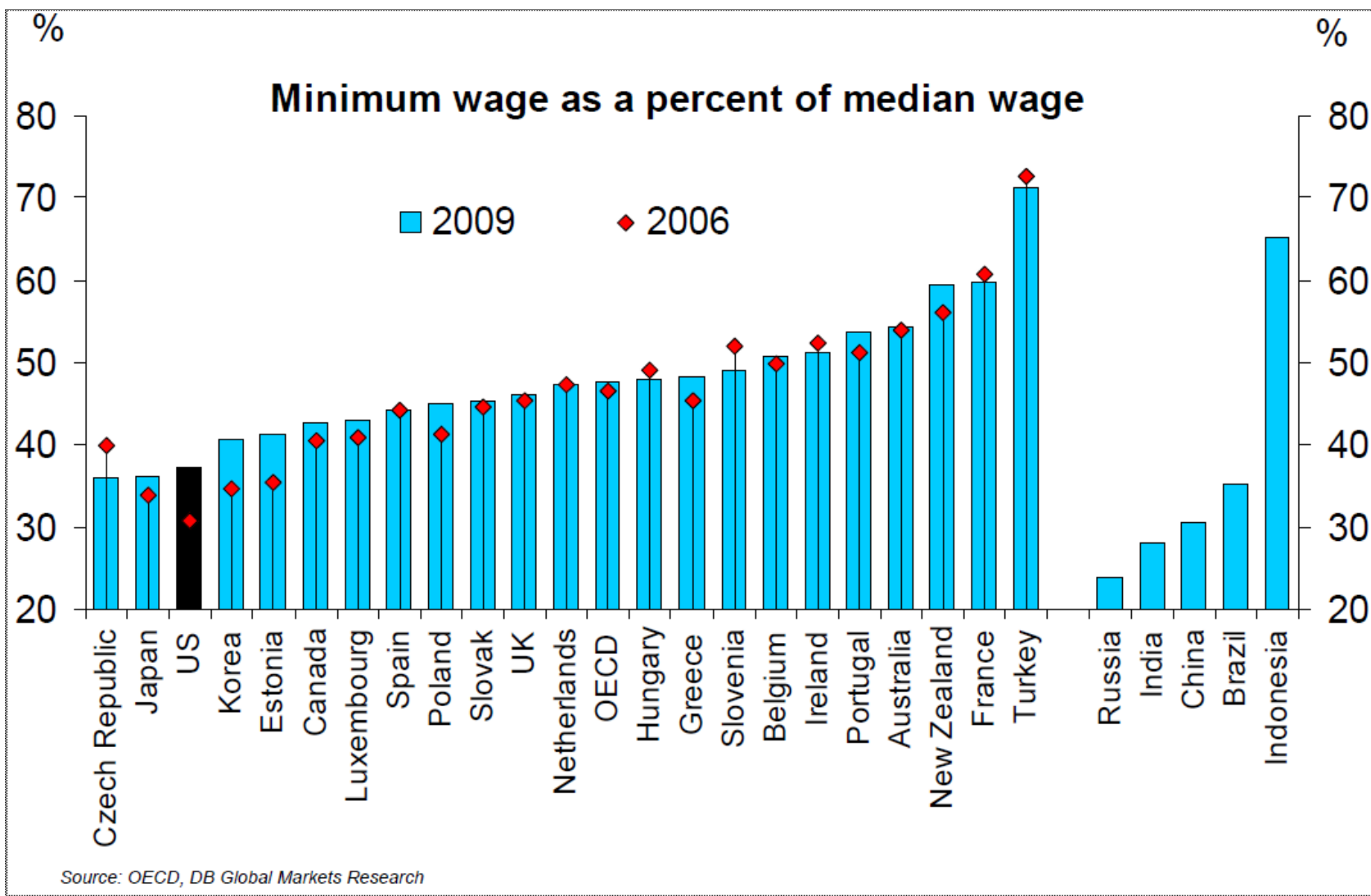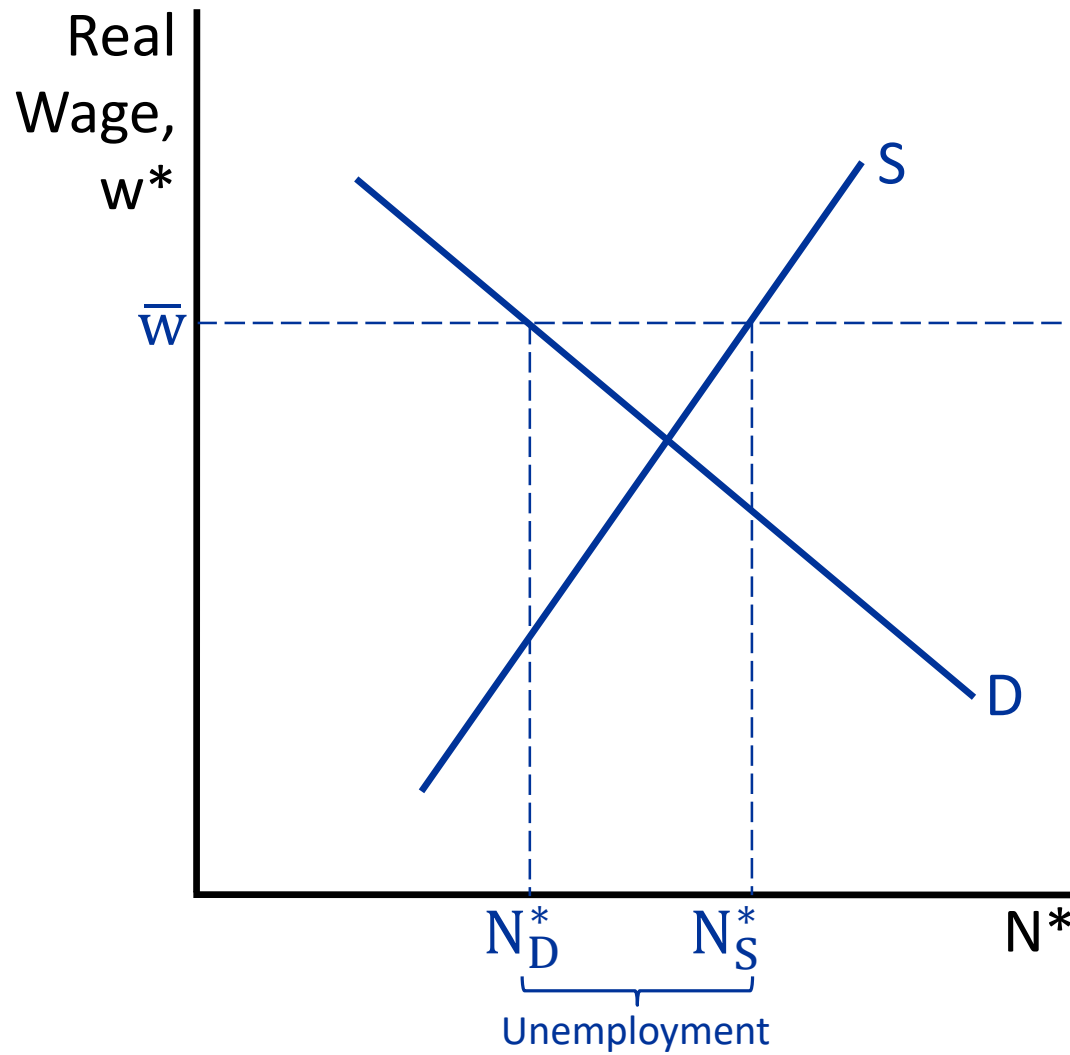# Some Candidate Sources of High Natural Rates of Unemployment in Europe

- Measurement issues

- High minimum wages and strong unions

- High payroll taxes

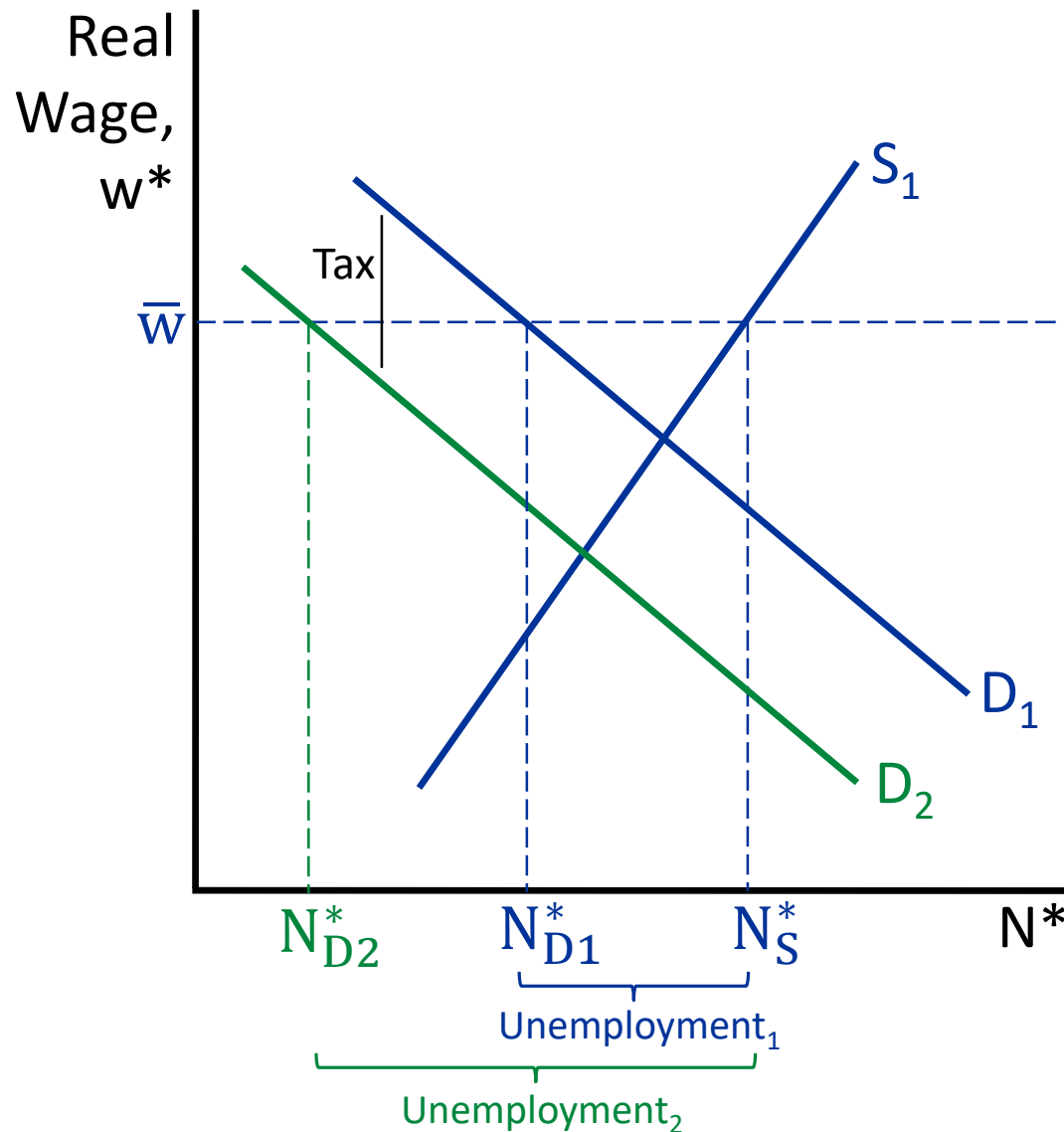- High firing costs

- …

Minimum wage as a percent of median wage

Source: OECD, DB Global Markets Research

A Wage Floor

Payroll Taxes, Selected Countries

Social security contributions differ across the euro zone. Some examples:

Country	Worker contributions, as a percentage of salary	Employer contributions, as a percentage of payroll
Ireland	4%	4.25%
Spain	6.25	31.08
Italy	9.19	31.78
France	9.9	32.68
Portugal	11 (18 proposed)	23.75
Greece	12.05	22.6
Germany	20.43	20.85
Slovenia	22.1	16.1
U.S.*	5.65	9.7

Note: Social security program elements vary from country to country
*As of 2011   Source: U.S. Social Security Administration   The Wall Street Journal

Source: *Wall Street Journal*.

High Payroll Taxes in the Presence of Job Rationing

Real Wage, w^*

S_1

Tax

$\overline{w}$

D_1

D_2

N^*_{D2} N^*_{D1} N^*_S N^*

Unemployment$_1$

Unemployment$_2$

Firing Costs: The Example of France (until recently)

"In France it is not possible to hire employees 'at will.' In other words, once you have taken on an employee you may only dismiss him or her for a specific reason.

"The reason or ground must be one which is recognised by French Statute ….

"The dismissal procedure on disciplinary grounds is very formalised and failure to follow the procedural steps, even where the dismissal is manifestly justified on the merits, may result in the Courts overturning the dismissal and ordering the reinstatement of the employee.

"Virtually all disciplinary measures are required to be in writing and generally need to be brought to the employee's attention by a registered letter sent to his or her home address …."

Source: http://www.frenchlaw.com/employment_law.htm.

Excerpt from France's *Code du Travail*

"If, in the case of the definitive and total closing of the company, the judge cannot, without being unaware of the autonomy of this reason for the firing, deduce the fault or the blameworthy frivolity from the sole absence of economic difficulties, or, in the contrary case, deduce the absence of fault from the existence of such difficulties, it is not forbidden to him to take into account the economic situation of the company in order to evaluate the conduct of the employer."

Firing Costs (in the Presence of Job Rationing)
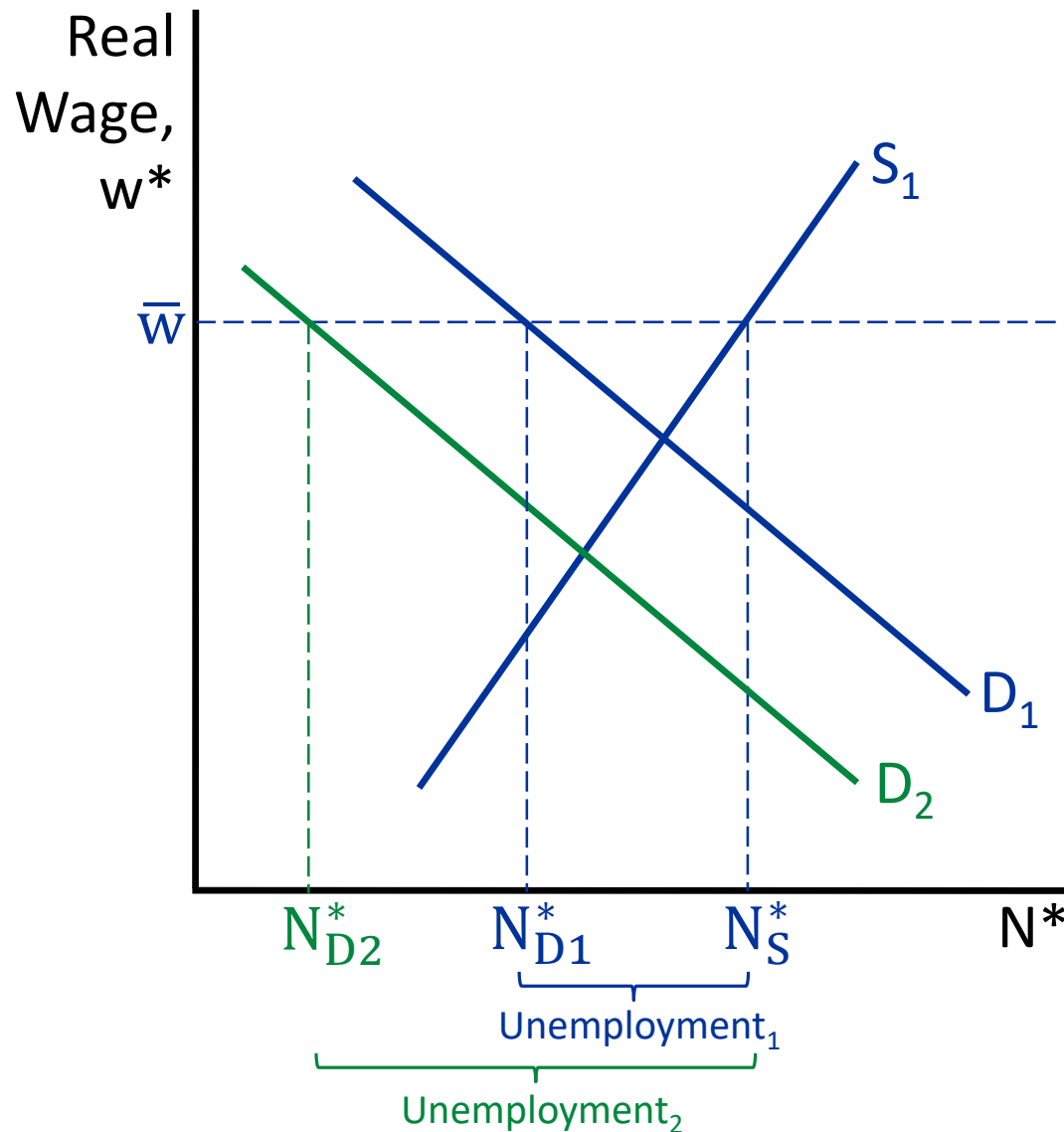
Recent Developments in France

"After 30 years of fraught attempts to make France's labor market more flexible, the government announced sweeping changes on Thursday with the potential to radically shift the balance of power from workers to employers." (*New York Times*, 8/31/2017)

"[I]t has become the defining paradox of [Emmanuel Macron's] rule that he remains much despised, even as his changes begin to bear fruit.

"The intractable unemployment rate, slayer of his predecessors, appears finally to be bending to a French president's touch, recently reaching its lowest rate in 12 years at 8.1 percent.

"Working-age employment rates are up, worker-training programs are showing big gains, quality long-term job contracts are outpacing precarious, short-term ones." (*NYT*, 2/25/2020).