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Underpriced?

Is There  
a Natural Rate  
of Unemployment?

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# BUSINESS REVIEW

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## WHY ARE SO MANY NEW STOCK ISSUES UNDERPRICED?

*Anthony Saunders*

According to studies, the prices of new stock issues are, on average, set below the prices investors appear willing to pay when the stocks start trading in the secondary market. Financial economists offer various explanations for this underpricing, including the "monopoly power" of underwriters, legal penalties for misinforming in a prospectus, and the costliness of collecting information about the issuing firms. What do these explanations—and the empirical evidence—imply for regulation of commercial and investment banks?

## IS THERE A NATURAL RATE OF UNEMPLOYMENT?

*William W. Lang*

In the early 1980s, unemployment rates in Europe and the U.S. reached their highest levels since the Great Depression. Since then, U.S. rates have dropped to more normal levels, but European rates are still relatively high. Citing the European experience, some economists are abandoning the idea that unemployment gravitates toward some natural rate. They advocate a theory of "hysteresis," which argues that aggregate-demand policies can raise the unemployment rate permanently. Will theories of hysteresis replace the natural rate theory?

# Why Are So Many New Stock Issues Underpriced?

*Anthony Saunders\**

Each year hundreds of small firms approach the capital market to issue equity for the first time. These firms are usually growing so fast, or have so many profitable investment projects available to them, that traditional sources of funds (bank loans, retained earnings, and the owners' own equity) are often insufficient to finance their expansion.

Because of this need for finance at a crucial stage in their growth, it is important for these firms that the prices of their shares reflect the

true value of company assets or growth opportunities. In particular, if their shares are sold too cheaply, these firms will have raised less capital than was warranted by the intrinsic values of their assets. In other words, their shares will have been "underpriced."

Considerable evidence shows that new or initial public equity offerings (IPOs) are underpriced on *average*. That is, the prices of firms' shares offered to the public for the first time are, on average, set below the prices investors appear willing to pay when the stocks start trading in the secondary market. That is, in the parlance of investment bankers, small firms appear to leave behind considerable "money on the table" at the time of a new issue.

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Why small firms raise fewer funds in the new-issue process than the market indicates they should is a crucial public policy issue. Clearly, some degree of market imperfection or lack of competition could cause such an outcome. For example, if, by restricting commercial banks' participation in the market, the Glass-Steagall Act of 1933 has allowed investment bankers to enjoy a type of monopoly (market) power over new equity-issuing firms, then this would suffice to explain underpricing. Alternatively, underpricing may be the premium the issuing firm must pay for having little information about itself to offer potential investors. In that case, underpricing would have little to do with the regulatory structure of the investment banking industry.

Let's examine the reasons for IPO underpricing and evaluate the degree to which underpricing is due to Glass-Steagall restrictions. What is the evidence on the degree of underpricing of U.S. IPOs? What are the various explanations for underpricing? And what are the implications of these explanations, and of the associated empirical evidence, for commercial and investment bank regulation?

## EVIDENCE ON UNDERPRICING

In "firm commitment" underwriting ("firm" in that the investment banker guarantees the price), an investment banker (and his syndicate) will undertake to buy the whole new issue of a firm at one price (the *bid* price, or BP) and seek to resell the issue to outside investors at another price (the *offer* price, or OP). In doing so, the investment banker offers a valuable risk-management service to the issuing firm by guaranteeing to purchase 100 percent of the new issue at the bid price (BP). The return for the investment banker in bearing underwriting risk—that is, the risk that investors will demand less than 100 percent of the issue when it is reoffered for sale to the market—is the spread between the public offer price and the bid price (OP - BP) plus fees and commissions. (Here,

and throughout this article, the term "investor" refers to those who buy shares through the investment banker at the offer price.) Thus, the investment banker's spread plus fees and commissions may be viewed as the *direct* cost of going public.

However, there is also potentially an *indirect* cost of going public, measured by the degree to which the issue is underpriced. For example, if the BP is \$5 per share and the OP is \$5.25 per share, then the underwriter's spread is 25 cents per share. However, suppose that on the first day of trading in the secondary market the share price (P) closes at \$7 per share. This indicates that the share has been underpriced in the new-issue process and that, potentially, the firm might have raised as much as \$7 per share had it been priced "correctly." This implies that the issuing firm has borne an additional *indirect* new-issue cost of \$1.75 per share (\$7.00 - \$5.25), because the investment banker has set the offer price below the price the market was willing to pay on the first day of trading.

Thus, more formally, the "raw" percentage degree of underpricing (UP) of an IPO can be defined as:

$$(1) \quad UP = [(P - OP) / OP] \times 100$$

where:

OP = offer price of the IPO

P = price observed at the end of  
either the first trading day, week,  
or month

If UP is positive, the issue has been underpriced; if UP is zero, the issue is accurately priced; and if UP is negative, it has been overpriced. The expression for UP is also the expression for a percentage rate of return. Thus, equation (1) can be viewed as the one-day (or one-week or one-month) *initial* return on buying an IPO (that is,  $UP = R$ , the initial return on the stock).

Returns calculated by equation (1) are deemed raw returns. However, researchers also compute excess (market-adjusted) returns, as well. The reasons for this are easy to see. Given a lag between the setting of the offer price and the beginning of trading on an exchange (anywhere from one day to two weeks or more), the price observed in the market on the first day of trading may be high (low) relative to the offer price simply because the stock market as a whole has risen (fallen) over this period. Thus, in analyzing underpricing, researchers need to control for the performance of the stock market in general. More specifically:

$$(2) \quad R_m = [(I_1 - I_0) / I_0] \times 100$$

where:

- $R_m$  = return on the market portfolio
- $I_1$  = level of the general market share index at the time of listing (first day, first week, or first month)
- $I_0$  = level of the market share index at the time offer is announced

If  $R_m$  is positive, the market has been going up in the time between the setting of the offer price and the listing of the stock on the stock exchange. If  $R_m$  is negative, the market has been falling. Excess market or risk-adjusted initial returns (EX) can therefore be defined as:<sup>1</sup>

$$(3) \quad EX = R - R_m$$

According to equation (3), underpricing occurs only when  $R$  is greater than  $R_m$ .

The findings of 22 studies that examine the degree of underpricing are summarized in the table on p. 10. Although the time periods, sample sizes, and ways of calculating initial returns (especially raw versus market-adjusted) differ widely across these studies, each finds underpricing on average. For example, studies that use a one-week period to calculate the difference between the offer price and the market price of an IPO find underpricing ranging from 5.9 percent to as much as 48.4 percent.<sup>2</sup>

Thus, an important empirical fact is that U.S. IPOs are underpriced on average, resulting in small firms raising less capital than is justified by the markets' ex post valuation of their shares.

#### WHY ARE NEW ISSUES UNDERPRICED?

Several reasons have been proposed in the institutional, finance, and economics literature as to why underpricing occurs. Although this article will not discuss all the proposed reasons, it concentrates on four views that have received much publicity. The first view attributes underpricing to "monopoly power" enjoyed by investment bankers. The second regards Securities and Exchange Commission regulations as the primary cause. And the third and fourth see underpricing as a problem of imperfect information among contracting parties—especially between investors and issuers.

<sup>1</sup> For a detailed discussion of excess returns, see Robert Schweitzer, "How Do Stock Returns React to Special Events?" this *Business Review* (July / August 1989) pp. 17-29. For IPOs, researchers adjust the initial return on the stock by deducting the return on the market. This is equivalent to assuming that a new IPO's returns move exactly with the market's. That is, they have a unit degree of systematic risk (or their  $\beta$  is 1). The reason for this assumption is that since IPOs have no past history of returns, one cannot estimate directly the IPO's  $\beta$  at the time of issue. The only researcher

who has tried to address this problem was Ibbotson (1975), who developed an ingenious method of constructing synthetic  $\beta$ 's for IPOs.

<sup>2</sup> It should be noted that these are one week's returns and are thus very large. These underpricing "costs" swamp the direct costs of a new issue, which are, on average, in the range of 2 to 5 percent of the issue's dollar size.

**The Monopoly Power of Underwriters.** One possible explanation for pervasive underpricing is the monopoly power the investment banker enjoys over the issuer.<sup>3</sup> Given that commercial banks are barred from entering into corporate equity underwriting (a result of the Glass-Steagall Act, which effectively separated commercial banking from investment banking), investment bankers may have a degree of monopoly power that they use to earn "rents" by underpricing new issues. Of course, competition among investment banks would limit the extent of this monopoly power.

But how real is this monopoly power? Compared to U.S. commercial banks, U.S. noncommercial banking firms and foreign banks have always faced fewer restrictions on entry into investment banking. Moreover, thrifts also can enter investment banking. In recent years, for example, nonbank firms such as General Electric and Prudential have entered the investment banking industry via acquisitions, as has Franklin Savings Bank, a thrift. This potential competition presumably places a limit on the degree of monopoly power enjoyed by investment bankers.

In addition, foreign banks were not subject to Glass-Steagall regulations until passage of the International Banking Act of 1978. Even then, those already possessing investment banking powers had them grandfathered. The emphasis on investment banks is due to their traditional dominance of the underwriting market and to their potential economies of scope (cost savings from offering a combination of services) in extending to their underwriting customers a broader range of financial services.

If investment bankers have monopoly power

over the new issuer, they might use it to increase both the spread between the offer price and bid price (the underwriters' spread) as well as the degree to which the offer price is set below the markets' true valuation ( $P$ ). A monopolist investment banker might have the incentive to underprice, since by doing so he can increase the probability of being able to sell the whole issue to outside investors (thereby minimizing his underwriting risk) while earning a high investment banking spread ( $OP - BP$ ) on the issue.<sup>4</sup>

Clearly, if this was the prime reason for underpricing, it would tend to make a case for allowing commercial banks into the underwriting business. This argument would be based on the expectation that pro-competitive effects would reduce the average degree of underpricing.<sup>5</sup> But this argument would, of

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<sup>4</sup>Implicitly, this argument presumes that investment bankers are risk-averse. This is reasonable, given the private nature of many companies, their limited capital bases, and the potential for a large loss if they take a "big hit" (loss) on an underwriting. For example, many U.S. investment bankers suffered significant losses in underwriting an issue of British Petroleum shares at the time of the October 1987 stock market crash.

<sup>5</sup>A different monopoly-based argument, advanced in Baron (1982), is that investment bankers possess monopoly power through their private access to *information* about the likely size of the demand for a new issue. Since issuers are viewed as being relatively uninformed about the nature of this demand, they can easily be exploited by the investment banker. Indeed, since the issuer has no way of knowing *ex ante* the size of investor demand, the underwriter has an incentive to save resources on distribution and search ("shirking") by simply underpricing enough to ensure that the whole issue is sold. In this context, the presence of potential competitors, such as commercial banks, and the importance of maintaining a reputation might be viewed as potential controls on the investment bankers' temptation to shirk. This presumes, however, that commercial banks, if they entered into underwriting, have the same abilities to "place" (sell to investors) a new issue as investment bankers do. In reality, it might take commercial bankers a number of years to build up the same placement powers.

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<sup>3</sup>For a discussion of the reasons for and effects of investment bankers' potential monopoly power, see Ibbotson (1975) and Pugel and White (1984).

course, be tempered by the need to maintain safety and soundness of the banking system, which could be lessened if the spread (P - OP) is small enough to risk inability to sell the entire issue.<sup>6</sup>

**Due-Diligence Insurance.** A second reason given for why underwriters underprice IPOs is the fear of potential legal problems stemming from overpriced issues. Underwriters, along with company directors, are required to exercise “due diligence” in ensuring the accuracy of the information contained in the prospectus they offer to investors.<sup>7</sup> Since passage of the Securities Acts of 1933 and 1934, both underwriters and directors may be held legally responsible under SEC regulations for the accuracy of this information.

Investors who end up holding heavily overpriced issues may well have an incentive to sue the underwriter and/or the company directors for publishing misleading or incomplete information in the prospectus. The investors could contend they were misled into believing this was a “good” issue rather than a “bad” one. To avoid any negative legal effects, as well as adverse publicity and damage to reputation, a risk-averse underwriter may try to keep investors happy by persistently underpricing IPOs. Hence, some researchers believe that the legal penalties for due-diligence failures are what have created incentives for investment bankers to underprice.

**The Problem of the “Winner’s Curse.”** The academic literature has paid a great deal of attention to a theory first advanced by Rock (1986) and extended by Beatty and Ritter (1986) and McStay (1987), among others. This theory considers underpricing as a competitive out-

come in an IPO market in which some investors are viewed as informed while a larger group is viewed as uninformed. As a result, underpricing is directly related to the degree of information imperfection—or, more specifically, information asymmetry—in the capital market and to the costs of collecting information. Both this theory and the one that follows view underpricing as a way of resolving the problem of costly information collection.

In Rock’s model, there are two types of IPOs: good issues and bad issues. Informed investors, defined as those who expend resources collecting information on IPOs, will bid only for those issues that are good. (This search effort is assumed to allow the informed investor to assess exactly the true value of the IPO.) Those investors who are uninformed, however, will not engage in expensive search, but rather will bid randomly across all issues, good and bad. It is further assumed that informed investors are never sufficiently large as a group to be able to purchase a whole issue.

First, consider a good issue. In this case, both informed and uninformed investors will bid for the issue (the uninformed in a random manner). Because both groups bid for the issue, it is likely to be oversubscribed, so that any single *individual* bidder (informed or uninformed) will get fewer shares than he bid for. Thus, for good issues, uninformed investors get only partial allotments.

Next, consider bad issues. In this case, informed investors will not bid at all. The only bidders will be the uninformed. Moreover, owing to the absence of competing informed bidders, any individual bidder will more likely achieve his full allotment (or a higher probability of an allotment). That is, the uninformed bidder suffers from the problem of the “winner’s curse”: he achieves a large allotment for bad IPOs and a small allotment for good IPOs.

Rock’s argument is that, because of the winner’s curse, IPOs have to be underpriced on average so as to produce an expected return for

<sup>6</sup> Since P is not known with certainty, a small spread (P - OP) risks occasional negative spreads, in which case the underwriting firm suffers a loss.

<sup>7</sup> See, for example, Tinic (1988).

the uninformed investor that is high enough to attract investment in IPOs regardless of whether the issue is good or bad.<sup>8</sup> That is, underpricing is a phenomenon perfectly consistent with competitive market conditions in a world of imperfect information flows. Thus, monopoly power is rejected as an argument explaining underpricing.

**Underpricing as a Dynamic Strategy.** In the most recent literature, underpricing is seen as a dynamic strategy employed by issuing firms to overcome the asymmetry of information between issuing firms and outside investors.<sup>9</sup> Implicitly, underpricing is viewed as a cost to be borne by the issuing firm's insiders to persuade investors to collect (or aggregate) information about the firm and in that way establish its true value in the secondary market. Moreover, the better the firm (a "good" issue), the more it will be underpriced relative to the bad issue.

Specifically, a good firm will underprice its issue to attract outside investors.<sup>10</sup> Investors (such as analysts) collect information about the firm and, in the secondary market, establish its true value above its offer price. The owners of the firm benefit from this strategy because once the true (higher) market value is established, the owners have an incentive to "cash in" by coming out with new (further) secondary offerings at the higher market price. Thus, the cost or losses of underpricing the IPO are offset

by the benefits from cashing in on the secondary offering.<sup>11</sup>

By comparison, a bad firm—one that knows it is a bad firm—will have the opposite incentives. In particular, the firm may seek to price the IPO as high as possible, since it knows that once investors collect information and discover that it is a "bad" firm, its stock's price will fall on the secondary market.<sup>12</sup>

As in the Rock model, these types of dynamic-strategy models view underpricing as a phenomenon that is consistent with competition in a world of imperfect information among issuing firms and investors. The difference is that, here, IPO underpricing is viewed as a cost to be borne by good firms, which is offset by the revenue benefits from making a secondary ("seasoned") offering later on at a higher price.

## IMPLICATIONS FOR BANK REGULATION

What do these models imply for bank regulation and, in particular, the Glass-Steagall Act? If underpricing is indeed due to information imperfections in the capital market—especially between firms and investors—it is difficult to see how commercial banks' entry into underwriting will have much effect, unless these banks somehow collect more information and alleviate the degree of information imperfection in the market. Since the modern theory of banking views banks as major collectors and users of information, increased production of information about small firms may indeed be a benefit from repealing Glass-Steagall.

However, a better test of whether Glass-

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<sup>8</sup> Technically, the *conditional* expected return for the uninformed investor, across both good and bad issues, must be at least as great as the risk-free rate.

<sup>9</sup> See, for example, Chemmanur (1989) and Welch (1988).

<sup>10</sup> In these models, the investment banker plays a largely passive function, operating as an agent on behalf of the principal (the firm). The failure of the investment banker to take a more active role may be seen as a weakness of these information-based models.

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<sup>11</sup> Welch (1988) offers preliminary evidence that these issues that are more underpriced tend to follow up more quickly with a secondary (seasoned) offering.

<sup>12</sup> This is not to imply that the bad firms necessarily overprice. However, the theory has the *aggregate* implication that the greater the proportion of good to bad issues in the market, the greater the degree of underpricing on *average*.



Steagall has undesirable costs is whether it confers monopoly power on existing investment banks that is reflected in the degree of underpricing. That is, what, if any, is the empirical evidence linking underpricing to the monopoly power of investment banks?

One implication of the monopoly-power hypothesis<sup>13</sup> is that an underwriter, because of his expertise and more precise knowledge of the issuing firm's true value, can save effort (shirk) by ensuring maximum sales through underpricing while still earning a high underwriting spread (OP - BP). However, even in a world of asymmetric information, presumably firms would learn that they are being exploited and, if competition exists, would switch to other underwriters. In contrast, monopoly power would imply that issuing firms would fare as well with one investment bank as with another and that underwriters could ignore all problems or considerations related to maintaining a reputation.

Beatty and Ritter (1986) have sought to test this reputation-monopoly power effect. That is, do investment bankers who heavily underprice in one period lose business from issuing firms in the next? Beatty and Ritter's results tended to confirm that the more an investment banker underpriced in one period, the greater his loss of business in the next—a result suggesting that monopoly power is temporary at best.

A second implication of the monopoly-power hypothesis is that the investment banker—to avoid risk—will have a greater incentive to underprice relatively risky issues so as to ensure maximum sales. For example, it can be argued that the more uncertain are firms' uses of the proceeds of the issue (for example, to pay

off existing debt, to develop new projects, and so on), the riskier the issue. Or, alternatively, the more variable the after-market returns on an issue—measured by the standard deviation of returns over a period subsequent to listing on the stock exchange—the riskier the issue. Thus, we would expect underpricing to increase as the number of potential uses of proceeds, and the volatility of its (expected) price in the after-market, grows.

Beatty and Ritter (1986) found a positive relationship between number of uses of proceeds and underpricing; Ritter (1984) and Miller and Reilly (1987) found a positive relationship between the standard deviation of after-market returns and the degree of underpricing. Both these results are consistent with the monopoly-power hypothesis; however, it *must* be noted that both findings are also consistent with the competitive-market, information-imperfection "winner's curse" theory of Rock (1986).<sup>14</sup>

A third potential implication of the monopoly-power model is that the degree of underpricing should have been less prior to passage of Glass-Steagall—that is, the pre-1933 *average* degree of underpricing should have been less than the post-1933 average degree. In a recent study, Tinic (1988) tested the degree of underpricing in the period 1923-30 and compared it with the period 1966-71. He found that underpricing was higher in the 1966-71 period. While Tinic interpreted these results as consistent with the due-diligence-insurance hypothesis—that is, the passage of the Securities Act of 1934, which forced investment banks to underprice to avoid potential lawsuits—they are also consistent with the monopoly-power hypothesis. That is, in a period preceding Glass-Steagall (when commercial banks had greater power to

<sup>13</sup> See Baron (1982), who developed a theory of investment banker monopoly power based on the inability of issuers to accurately monitor the investment bankers' effort in placing new shares with investors.

<sup>14</sup> That is, the greater the risk or uncertainty about the issue, the greater the cost of becoming informed and thus the greater the degree of underpricing required in equilibrium.

underwrite corporate securities),<sup>15</sup> the degree of underpricing was less than in a period following the Glass-Steagall separation of powers.

A fourth implication of the monopoly-power hypothesis is that IPOs of investment banks (for example, Morgan Stanley going public) should *not* be underpriced, since the investment bank brings its "own firm" public. Looking at 37 IPOs of investment banks that went public in the 1970-84 period and participated in the distribution of their own issues, Muscarella and Vetsuypens (1987) find an average degree of underpricing of 8 percent on the first day of trading. At first sight this tends to contradict the monopoly-power hypothesis as the sole reason for underpricing; however, it could be argued that 8 percent underpricing is less

than the median or mean underpricing found in the majority of studies listed in the table below and that monopoly power may offer a partial explanation for underpricing.

Nevertheless, the results favoring monopoly power as the major determinant of new-issues underpricing appear somewhat weak. Indeed, the evidence is largely consistent with the existence of competitive markets in which investors have incomplete or imperfect infor-

### Initial Returns, According to Various Studies

Study	Sample Period	Sample Size	Initial Returns	
			1 Week	1 Mo.
Reilly/Hatfield (1969)	1963-65	53	9.9%	8.7%
McDonald/Fisher (1972)	1969-70	142	28.5%	34.6%
Logue (1973)	1965-69	250	—	41.7%
Reilly (1973)	1966	62	9.9%	—
Neuberger/Hammond (1974)	1965-69	816	17.1%	19.1%
Ibbotson (1975)	1960-71	128	—	11.4%
Ibbotson/Jaffe (1975)	1960-70	2650	16.8%	—
Reilly (1978)	1972-75	486	10.9%	11.6%
Block/Stanley (1980)	1974-78	102	5.9%	3.3%
Neuberger/LaChapelle (1983)	1975-80	118	27.7%	33.6%
Ibbotson (1982)	1971-81	N/A	—	2.9%
Ritter (1984)	1960-82	5162	18.8%	—
	1977-82	1028	26.5%	—
	1980-81	325	48.4%	—
Giddy (1985)	1976-83	604	10.2%	—
John/Saunders (1986)	1976-82	78	—	8.5%
Beatty/Ritter (1986)	1981-82	545	14.1%	—
Chalk/Peavy (1986)	1974-82	440	13.8%	—
Ritter (1987)	1977-82			
	Firm commitment	664	14.8%	—
	Best efforts	364	47.8%	—
Miller/Reilly (1987)	1982-83	510	9.9%	—
Muscarella/Vetsuypens (1987)	1983-87	1184	—	7.6%

<sup>15</sup>This was particularly true in 1927-33, when commercial banks had the same powers as investment banks. Since technology and the structure of the financial services industry are continuously changing, a more valid test might have been to compare underpricing in the period immediately following passage of the Glass-Steagall Act.

mation about new firms. While new issues did appear to be *less* underpriced before Glass-Steagall (consistent with the monopoly-power hypothesis), evidence suggests that those investment banks that excessively underprice today lose future business from prospective issuing firms and that investment banks' own IPOs are also underpriced on average (although less so than those of other firms). The gains from allowing commercial banks to compete directly with investment banks for corporate

equity underwritings may come less from creating more potential competition than from collecting, producing, and disseminating more information about small firms in the new-issue process. This conclusion suggests that allowing banks into investment banking activities may indeed bring about price changes that benefit the public; however, those changes may be smaller and occur for different reasons than once thought.

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# Is There a Natural Rate of Unemployment?

*William W. Lang\**

The idea that a nation's unemployment rate gravitates toward some "natural" rate has been a mainstream theory in macroeconomics for the past 20 years. According to this theory, the natural rate of unemployment is determined by factors related to the economy's supply side, such as labor force demographics. Actions that influence aggregate demand, such as monetary and fiscal policies, can affect how

much unemployment varies over the business cycle, but they cannot affect its average level.

The unemployment situation in Europe has forced economists to reevaluate the *natural rate theory*. During the early 1980s, recessions in Europe and the United States boosted unemployment rates to their highest levels since the Great Depression. Since then, unemployment has returned to more normal levels in the United States. But in Europe, unemployment remains high even now.

Citing the European experience, some economists are advocating that the natural rate theory be replaced with a theory of "hysteresis," a theory that explains how aggregate-demand

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policies can permanently raise the unemployment rate. Although the debate is still in its early stages, at issue is the long-run impact of demand-management policies on unemployment.

**THE NATURAL RATE THEORY**

Regardless of how healthy the economy is, some unemployment is inevitable. Some people quit their jobs, some workers are fired, and some industries reduce employment levels while others increase them. The unemployment that these shifts create constitutes the nation's natural rate of unemployment.<sup>1</sup>

**Frictional and Structural Unemployment.** One component of the natural rate is "frictional" unemployment, represented by unemployed workers who are temporarily between jobs or who have just come into the labor force. A worker who quits his job to find work in another trade or another industry would be considered frictionally unemployed.

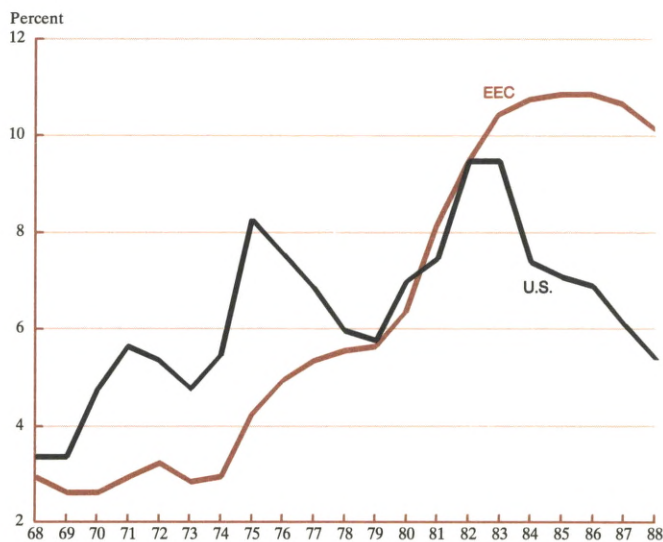
The other component of the natural rate is "structural" unemployment. This occurs when workers do not have the necessary skills to meet the current demands of employers. Often, young workers lack sufficient education or training to find work. Sometimes, even expe-

rienced workers find themselves unemployed when their skills are no longer in demand because of declining demand for the goods they once produced or because of changes in technology. For example, in the United States the demand for steel workers has been depressed since the mid-1970s. Now these structurally unemployed workers must either relocate or develop new skills in order to find jobs.

According to the natural rate theory, the average level of both structural and frictional unemployment is relatively unaffected by monetary or fiscal policies. Over the long run,

**Unemployment Rates  
in Europe and the U.S.  
over the Past Two Decades**

After peaking in 1982, U.S. unemployment has returned to more normal levels of between 5 percent and 6 percent—levels thought to represent the "natural" rate of unemployment. But unemployment in Europe kept rising after 1982 and has remained high. It's easy to see why many economists have questioned the natural rate theory, at least for the European economies.



<sup>1</sup>Edmund Phelps, "Phillips Curves, Expectations of Inflation and Optimal Unemployment Over Time," *Journal of Political Economy* (August 1967), and Milton Friedman, "The Role of Monetary Policy," *American Economic Review* (March 1968), are generally credited with developing the natural rate theory of unemployment.

frictional and structural unemployment is determined by supply-side factors: the demographic composition of the labor force, shifts in employment between industries and regions, minimum-wage laws, and government benefits to the unemployed.

The demographic composition of the labor force can affect the natural rate of unemployment significantly. For example, workers under the age of 25 have higher average rates of unemployment than older workers. This is because young workers change jobs relatively frequently in their search for appropriate career employment. In other words, young workers have higher rates of frictional unemployment because they either quit or are fired more frequently than older workers.

Rapid shifts in employment across industries also tend to increase the levels of structural and frictional unemployment. When workers must shift from one industry to another, they usually experience a period of unemployment while searching for new jobs. Moreover, workers in declining industries may not have the appropriate skills for the industries that do have job openings. All of this would lead to higher levels of structural unemployment.

Increases in minimum-wage benefits and in government benefits to the unemployed tend to increase the level of structural and frictional unemployment. A higher minimum wage will increase structural unemployment, since employers are less inclined to hire poorly educated workers with little work experience if they must be paid a higher wage. Similarly, an increase in government benefits to the unemployed will increase frictional unemployment, as these higher benefits tend to make unemployed workers less willing to accept lower-paying jobs.

**Cyclical Unemployment.** According to the natural rate theory, normal rates of structural and frictional unemployment are invariant to demand-management policies, but the cyclical

component of unemployment is not.<sup>2</sup>

For example, a contractionary monetary policy lowers the demand for goods and services, which tends to reduce inflation. But wage increases do not slow commensurately. Workers' wages are often set a year or so in advance, many by contract. And rarely are wages indexed completely to the inflation rate.<sup>3</sup> So firms, faced with declining demand for their product and inflexible labor costs, lay off workers and cut back on output. Thus, the tighter monetary policy reduces inflation but raises unemployment.

According to the natural rate theory, this trade-off between inflation and unemployment is short-lived. The economy eventually adjusts to the lower inflation rate. Workers and firms write new wage contracts based on the lower inflation rate, and real wages once again reflect the fundamental supply and demand conditions. Producers find it profitable to rehire workers and raise output. In the end, the contractionary monetary policy permanently lowers the inflation rate, but unemployment returns to its natural rate.

### THE NATURAL RATE THEORY EXPLAINS THE U.S. EXPERIENCE— BUT NOT EUROPE'S

The natural rate theory associates an economic downturn with declining inflation and

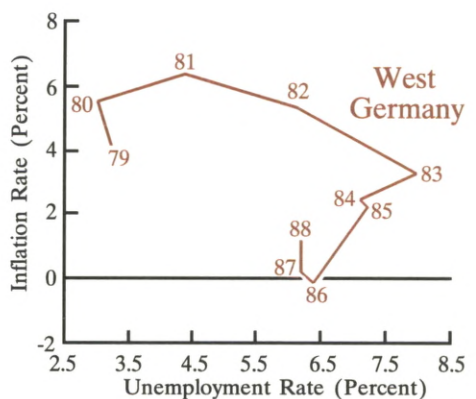
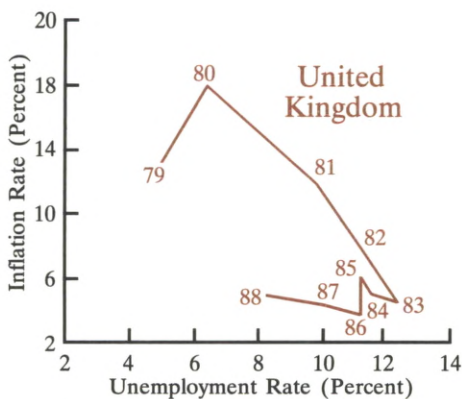
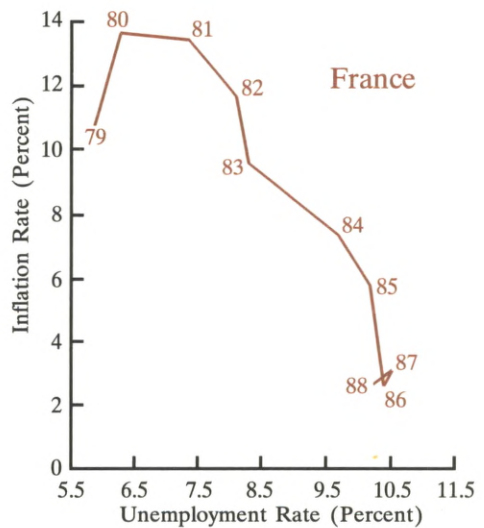
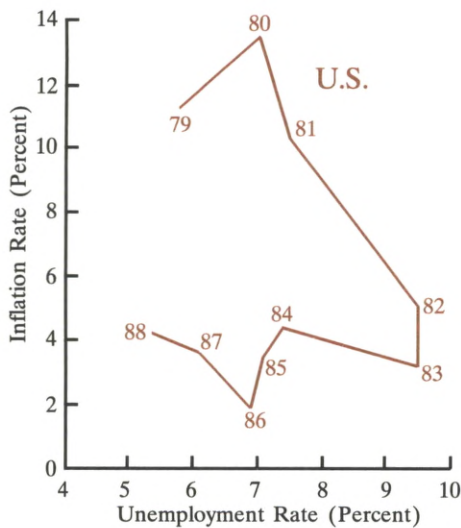
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<sup>2</sup>As already discussed, a government's social welfare policy may have an impact on the levels of structural and frictional unemployment.

<sup>3</sup>There are, of course, different versions of the natural rate theory. Modern Keynesians emphasize the role of rigid wages and prices in explaining the short-run effects of monetary policy. The New Classical economists argue that only the unexpected components of monetary policy affect unemployment. However, the crucial issue for our discussion is that both versions of the natural rate theory have argued that monetary policy, over the long run, has no effect on the average unemployment rate.

## How Different Are the Inflation-Unemployment Experiences for the U.S. and Europe?

These graphs show the unemployment rate (horizontal axis) and the inflation rate (vertical axis) for the United States, France, West Germany, and the United Kingdom over the 1979-88 period. Note the U.S. economy's proclivity to return to a "natural rate" of unemployment: U.S. unemployment increased from 1979 to 1982 while inflation had begun to decline in 1980; after inflation had stabilized by 1983, unemployment reversed direction to settle in 1988 at a rate even lower than 10 years before. Inflation also plummeted in the three European economies; however, unemployment there has actually increased in the past decade.





high unemployment in the short run. Over the longer run, unemployment returns to the natural rate while inflation remains low.

The recent paths of inflation and unemployment in the U.S. fit the natural rate theory. Between 1979 and 1982, the United States adopted disinflationary money and credit policies that drove the unemployment rate to nearly 10 percent. But since 1983, inflation has leveled off and unemployment has fallen even below its 1979 level. While its precise level is debatable, the natural rate of U.S. unemployment seems to be somewhere between 5 percent and 6 percent.

The inflation and unemployment levels for several European countries tell a dramatically different story. For example, between 1979 and 1985 the inflation rate in France fell and unemployment rose. But after 1985, when the inflation rate stabilized at about 3 percent, the unemployment rate remained in double digits. While the French example is the most dramatic, the unemployment rates for West Germany and the United Kingdom seem to have stabilized at significantly higher levels as well.

structural and frictional unemployment rates for both groups are higher than those for male workers. However, demographic changes alone do not justify a relative rise in many European countries' average unemployment rates.

Let's look at the change in the share of young workers in the U.S., French, German, Italian, Dutch, and Swedish labor markets between the 1960s and the 1980s (see Figure 1). Of all these countries, only the U.S. has seen an increase in that share. The European countries have experienced declining shares.<sup>5</sup>

Women's labor force shares increased for all the countries (see Figure 2). However, there is no strong correlation between those countries showing large gains in this share and those

workers are becoming more firmly attached to the labor force. In fact, in the U.S., the female unemployment rate is now roughly equivalent to the male unemployment rate.

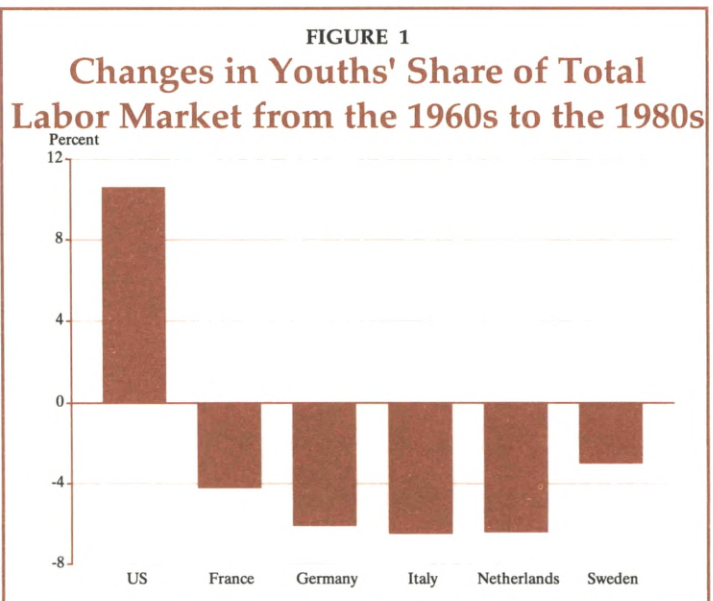
<sup>5</sup>This may seem surprising, since European countries also experienced a baby boom. However, young people in Europe stay in school longer and thus remain out of the labor force longer than their U.S. counterparts.

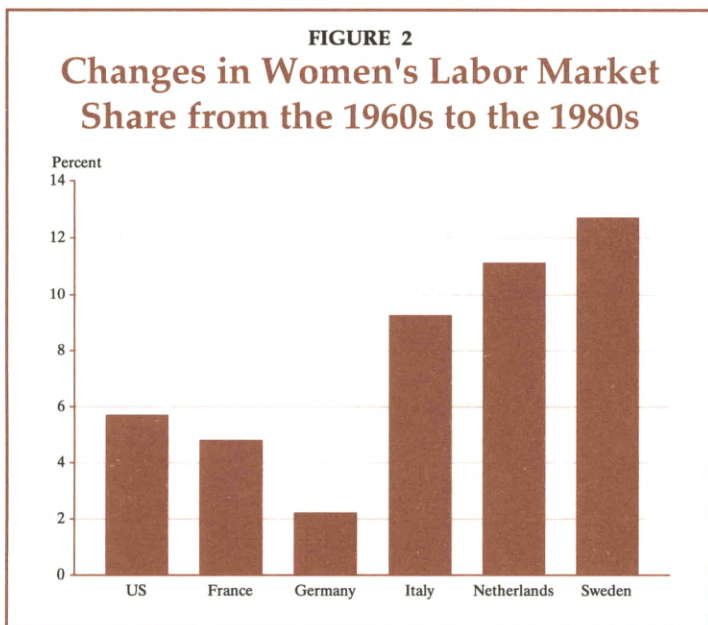
## HAS EUROPE'S NATURAL RATE RISEN?

In principle, changes in normal rates of structural or frictional unemployment could have boosted Europe's natural rate above the U.S. rate. However, the factors most commonly cited fail to support this view.

**Demographic Changes.** One explanation commonly given for the notion of a higher natural rate in Europe is the increase in the relative shares of women and youth in the labor force.<sup>4</sup> The

<sup>4</sup>The argument for higher average rates of unemployment among women may be losing some of its force, as women





countries with large increases in unemployment. Sweden, which has not experienced sustained high unemployment, shows the largest expansion in the percentage of working women. The U.S. is in the middle in terms of growth in the share of women in the labor force when compared to France, Germany, Italy, and the Netherlands; yet all of those European countries have experienced greater increases in unemployment rates.

In short, the European countries with large increases in average unemployment have not seen relatively big increases in the shares of women and young people in their labor forces. This suggests that demographic shifts are not inducing a higher natural rate of unemployment for these countries.

**Job Shifts Across Industries.** Another popular explanation for why Europe's natural rate may have risen is that the secular movement of employment away from manufacturing and toward services has increased both structural and cyclical unemployment. Even if the average number of jobs to be filled remains unchanged, shifting employment from one sector

to another increases unemployment, because workers in the declining industries must learn new skills and search for jobs in healthier industries.<sup>6</sup>

On the surface, this explanation seems to fit with the developed nations' rapid shifts in employment from the manufacturing sector to the service sector. But several studies have found that sectoral shifts have little impact on overall unemployment rates.<sup>7</sup>

To identify national shifts in employment, economists often develop a "mismatch index" for the country. The index captures the divergences in employment growth among the industries in

the economy. When the index number is low, employment rates in all industries are growing at about the same pace. When the index number is high, the industries' employment growth rates are diverging significantly—some may be growing rapidly, some more slowly, and some not at all.

Having calculated mismatch indexes for several OECD countries, researcher Robert Flanagan found that the indexes for France and West Germany were lower in the late 1970s than they had been in the previous 15 years and

<sup>6</sup>Probably the most influential paper on this subject is by David Lilien, "Sectoral Shifts and Cyclical Unemployment," *Journal of Political Economy* 90 (August 1982) pp. 777-93.

<sup>7</sup>See, for example, Richard Jackman, Richard Layard, and Christopher Pissarides, "On Vacancies," Discussion Paper 165, London School of Economics, Centre for Labour Economics, 1985; Orley Ashenfelter and David Card, "Why Have Unemployment Rates in Canada and the United States Diverged?" *Economica* 53 (Supplement 1986) pp. 171-96.

that they remained low in the 1980s. And while the index value for the United Kingdom rose in the early 1980s, the rate of increase only matched that of the U.S., where unemployment has fallen back to its earlier levels.<sup>8</sup> (See *Mismatch Indexes*.) So, at least by this measure, a shifting industrial mix does not seem to have raised natural rates of unemployment for France, West Germany, and the United Kingdom recently.

Flanagan examined other types of mismatch indexes, including measures of shifts in labor market conditions across regions. He concluded that any mismatch effect on the relative rise in European unemployment has been small.

**Minimum-Wage Laws and Government Programs.** Government programs and minimum-wage laws, the last factors cited as possibly having an effect on the natural rate of unemployment, could in principle have generated increases in Europe's natural rate. There is little evidence, however, that Europe's minimum-wage laws and government benefits to the unemployed have been more generous over the last decade than before. If anything, government programs have tended to be more stringent than in the past.

Government programs may be contributing to the increase in European unemployment indirectly. When there are employment declines in high-wage industries, workers may be unwilling to accept low-wage jobs if they are receiving substantial unemployment benefits from the government. But it would be difficult to argue that government benefit programs are the sole explanation for high European unemployment.

<sup>8</sup>Robert J. Flanagan, "Labor Market Behavior and European Economic Growth," in *Barriers to European Growth*, Robert Z. Lawrence and Charles L. Schultze, eds. (Washington, D.C.: Brookings Institution, 1987) pp. 175-211.

### Mismatch Indexes Divergences in Employment Growth Among Industries, 1960 - 1983

Years	West			
	France	Germany	U.K.	U.S.
1960-64	2.3	2.6	1.9	2.4
1965-69	2.8	3.2	2.2	2.1
1970-74	2.8	3.2	2.5	2.3
1976-79	2.0	1.9	1.4	1.5
1980-83	1.7	1.8	3.4	2.9

Based on data in Robert J. Flanagan, "Labor Market Behavior and European Growth," in *Barriers to European Growth*, Robert Z. Lawrence and Charles L. Schultze, eds. (Brookings Institution: Washington, D.C., 1987) p. 181. Data for 1975 were not available.

### THEORIES OF HYSTERESIS: THE IMPACT OF AGGREGATE-DEMAND POLICIES

The prolonged slump in Europe has helped revive the notion that aggregate-demand policy can have long-run impacts on the level of unemployment.<sup>9</sup> The term "hysteresis" has been used to describe theories in which temporary shifts in aggregate demand cause permanent or long-term changes in unemployment.

If there is a natural rate of unemployment,

<sup>9</sup>*Unemployment, Hysteresis and the Natural Rate Hypothesis*, Rod Cross, ed. (Basil Blackwell Ltd., 1988), presents various papers on this subject by European and American authors. In "On the History of Hysteresis," Rod Cross and Andrew Allan note that the term "hysteresis" comes from the Greek word meaning "to come after" or "to be behind." It was originally used by physical scientists to describe the tendency for a previous state or condition to persist. Economists apply the term to theories that attempt to explain why high unemployment in one period tends to produce high unemployment in subsequent periods.

then a recession causes only temporary changes in unemployment. The unemployment rate returns to the natural rate during the subsequent economic expansion. If there is hysteresis in the unemployment rate, the unemployment rate remains permanently higher. That is, there is no inherent tendency for the unemployment rate to fall back to its pre-recession level.<sup>10</sup>

**Wage Rigidities.** Almost all theories of hysteresis in unemployment have in common the notion that real wages are not fully flexible, even in the long term. For one reason or another, real wages remain high even when there are large numbers of unemployed workers willing to work for less.

Recent discussions of hysteresis have focused on microeconomic rationales for wage rigidity. In particular, theorists are exploring the idea that employed workers have the power to prevent wage cuts and thus introduce the rigidities that cause hysteresis in unemployment.

**Insider/Outsider Models.** In insider/outsider models, employed workers, called "insiders," are able to maintain wages at high levels even though unemployed workers, or "outsiders," are willing to work for lower wages. Insiders can prevent firms from hiring the low-wage workers by making it more costly for firms to fire employees and hire others in their place.

To some extent, every firm that hires new workers incurs some cost in training them. Insiders can raise the costs by refusing to participate fully in the training process. And they can punish firms that hire outsiders at low wages in other ways. They can take some overt action to disrupt production, such as staging a strike or a slowdown. Or they may simply put

less effort into their jobs.<sup>11</sup> Forming a labor union can enhance insiders' power to act collectively, but insiders can punish the firm even without a union.

The key insight of the insider/outsider models is that once workers become unemployed, they lose their status as insiders. The now-smaller group of insiders is unwilling to reduce wages in order to get the unemployed rehired, because these former employees no longer exercise any influence in the group. In other words, the more exclusive the group, the less willing the group will be to make wage concessions to increase employment.

**The Permanent Impact of Aggregate Demand.** To explain permanent shifts in the unemployment rate, theories of hysteresis add to the insider/outsider model the notion that aggregate-demand swings can cause persistent productivity shifts.

Suppose a monetary contraction slows the economy and induces firms to lay off workers. According to the insider/outsider model, the remaining insiders will keep real wages from falling, despite the slack in the labor market. But if the economic contraction somehow reduces labor's productivity, then firms will not rehire laid-off workers unless real wages decline. So the combination of rigid wages and lower productivity keeps unemployment from returning to its old level. Now the question is, how does the economic contraction permanently lower productivity?

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<sup>11</sup>For a fuller treatment of the insider/outsider model, see Assar Lindback and Dennis Snower, "Wage Setting, Unemployment and Insider-Outsider Relations," *American Economic Review* 72 (1986). Note that the ability of insiders to punish firms for hiring low-wage workers would not affect new entrants into an industry. Such insider power will play a significant role only when there are fixed costs or other barriers to start-up firms in an industry. It is worth noting that much of the increase in U.S. employment over the past decade is due to small firms, many of them start-up firms. This may help explain why insiders in the U.S. have been less effective in exerting pressure to maintain high real wages.

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<sup>10</sup>Of course, an expansionary economic policy or other positive economic events may push the unemployment rate below its pre-recession level.

Theorists offer two explanations. First, a contractionary monetary policy raises interest rates and lowers spending on capital goods. The reduction in capital formation, in turn, lowers workers' productivity. Without a commensurate fall in real wages, firms have less incentive to hire workers—and so unemployment is permanently higher.

What is the evidence for this source of hysteresis? While member nations of the European Economic Community have seen substantial increases in their unemployment rates, the ratio of capital to employed worker has remained roughly constant. This has led some to argue that the existing capital stock is inadequate to employ the current available labor force in the EEC countries.

The second possible explanation for hysteresis focuses on the long-term impact of unemployment itself. When an economic contraction throws people out of work, long layoffs may erode their job skills. Without a decline in real wages, these less skilled workers will find firms unwilling to rehire them. Thus, what could have been a temporary increase in unemployment is perpetuated by the wage rigidity.

The argument that prolonged unemployment will erode job skills is difficult to quantify. Direct measures of labor productivity reflect the productivity of workers who are employed, not those who are unemployed. One piece of supporting evidence for this hypothesis is that a large part of the increase in unemployment is due to an increase in the number of long-term unemployed.

In short, theories of hysteresis propose that Europe's high unemployment is due to wage rigidity, insufficient capital formation, and deteriorating job skills.

## **HYSTERESIS LEAVES SOME QUESTIONS UNANSWERED**

While theories of hysteresis seem consistent with some aspects of the European experience, some difficult issues must still be addressed

before these theories gain wide acceptance.

First, the data indicate that the persistence of unemployment has increased over the past 20 years both in Europe and in the United States. Since the current theories of hysteresis rely on various forms of wage rigidity, we would expect those rigidities to have increased as well. But there is little evidence that union or insider power has increased over this period. In fact, labor union power has generally waned over the past two decades in Europe and the United States.

Perhaps the more important question is why the natural rate theory seems to fit the United States but not Europe. The microeconomics of labor markets in the U.S. show some important differences compared to European labor markets. For example, the U.S. has fewer union members as a percentage of the labor force. In addition, social welfare programs in the United States are, on the whole, less generous than in Europe. Both of these factors tend to reduce real wage rigidity in the United States. So perhaps the labor market in the U.S. more closely approximates the type of labor market envisioned by the natural rate theory.

Alternatively, hysteresis may characterize labor markets in both the U.S. and Europe, and their experiences may differ only because of different macroeconomic policies. According to this interpretation, after the 1982 recession the United States decided to reduce unemployment at the risk of higher inflation by engaging in a more stimulative macroeconomic policy than Europe.

The U.S. has yet to experience a sharp acceleration in inflation. Perhaps this is because the recessions of 1980 and 1982 have given the Federal Reserve credibility as an inflation-fighter—and this is keeping the lid on inflation expectations. Oil prices have helped as well. Their sharp increases of the 1970s were largely reversed in the 1980s.

Separating the contributions of macroeconomic demand-side policy from microeconomic

supply-side conditions is crucial to U.S. policymakers. If it is the microeconomics of the labor market that differentiate the U.S. from Europe—that is, if the U.S. has a natural rate of unemployment but Europe does not—then U.S. policymakers face no trade-off between inflation and unemployment in the long run. If it is macroeconomics that separate the two—in other words, if both the U.S. and Europe are subject to hysteresis—then U.S. inflation policies have a lasting impact on unemployment.

### CONCLUSION

Stubbornly high unemployment rates in Europe are beginning to undermine economists' confidence in the natural rate theory. The theory says that only supply-side factors, such as demographics and technology, have

any persistent impact on a nation's unemployment rate.

There is little evidence, however, that adverse supply-side shifts have hit Europe in recent years. Now some economists are breaking away from the natural rate idea and are exploring the possibility that aggregate demand shifts—including changes in monetary and fiscal policy—can have persistent effects on the level of unemployment.

According to these theories of hysteresis, Europe's high unemployment is the legacy of policymakers' anti-inflation programs of the early 1980s. If these theories are correct, then policymakers' decisions have much more of a long-run impact on the unemployment rate than economists had realized up until now.



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