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UNEMPLOYMENT:
IS SWITZERLAND AN EXCEPTION?

Andriy Krahmal

Introduction

Of the recent economic developments in Switzerland, the increased unemployment level deserves special attention. In the 1990s Switzerland's long tradition of low (almost nonexistent) unemployment was broken. Although still below the levels experienced in most industrialized countries, Switzerland's recent higher unemployment rate has caused speculation about the causes of this unusual (for Switzerland) economic phenomenon.

The objective of this paper is to investigate the behavior of the unemployment rate in Switzerland by utilizing the simplified Phillips curve relationship. This concept illustrates the tradeoff between unemployment and inflation. The rate of unemployment (or the rate of change of unemployment) and the rate of change of wages are negatively related. When unemployment is low, employers tend to bid up wages in an effort to attract qualified workers. During periods of high unemployment, this type of bidding is unnecessary, and therefore the rate of growth of money wages is lower.

Observing how well the model explains the jobless rate allows us to speculate about the causes of increased unemployment in Switzerland. It can also be determined whether increased unemployment represents a structural change in Switzerland's economic environment or if it is the effect of a temporary change in the growth rate of aggregate demand, or perhaps a change in the behavioral patterns of the economic agents.

Background

In 1987 two Swiss economists, Danthine and Lambelet, explained the success of Switzerland's economy in this way:

The central explanation of Switzerland's success actually lies in its very structure. Many factors explain why it is a well functioning economy. Chiefly, the labour markets are most efficient. The bargaining process allows for all the desirable features: real wage flexibility, relative wage flexibility, work sharing during recessions, and apprenticeships to
adapt the qualitative supply of labour to its demand... [J]ob search is easy and reasonably costless; local pressures for wasteful subsidies are almost unheard of so that firms and their workers can only fight for increased effectiveness. (Danthine and Lambelet, pp. 149-50)

However, during the 1990s the employment environment of Switzerland experienced a number of downturns. Had Switzerland, the so-called “employment paradise” of the ’70s and ’80s, permanently lost its nearly full employment status? In 1998 the Economist reported on the state of the unemployment situation in Switzerland in the following way:

These are trying times for the Swiss.... The prosperity that has propped up Swiss self-satisfaction has also taken a knock: until last year, the economy had barely grown at all since 1991, and unemployment, once unheard of, had piled up. (“Charlemagne: Ruth Dreifuss....,” p. 55)

As a result of these developments, the issue of Swiss unemployment in the first half of the 1990s, when the jobless rate climbed to an unusually high five and a half percent, needs to be addressed.

Figure 1 depicts the unemployment rates in Switzerland for the period 1988–98. The figure shows a clear upward trend in unemployment rates from 1988 until 1993, a period of volatility from 1993 until 1996, and a gradual decrease since then. According to Yves Fluckiger, even during the ’90s, when the unemployment rate in Switzerland grew at a rate faster than that of any other OECD member, the jobless rate was still among the lowest in Europe. (p. 369) Several sources reported the unemployment rate reaching post-war record highs in the 1990s, the time when Switzerland underwent one of its deepest recessions. (“Swiss Franc Unable....,” p. 4; “Swiss Franc: In Slow....,” p. 4)

According to the Secretariat for Economic Affairs (SECO), a Swiss governmental agency,
there are two sources of unemployment statistics in Switzerland. SECO itself publishes unemployment rates provided by the Federal Office for Economics and Labor (Bundesamt für Wirtschaft und Arbeit), which are based on the total number of individuals registered with the regional employment agency centers. The Federal Office for Statistics, another governmental agency, publishes unemployment rates based on random sampling in accordance with internationally accepted estimation methods. (SECO) The statistical analysis I have used in this paper is based on the unemployment statistics provided by the Federal Office for Economics and Labor, which defines the unemployment rate as the ratio of the number of registered unemployed individuals to the number of individuals in the labor force. Anyone who has engaged in at least six hours of paid activity per week is considered to be in the labor force, while a registered unemployed individual is defined as any unemployed person who reported to one of the regional employment centers. (SECO)

After 1996 the Swiss unemployment rate began to decline, which led to a search for causes and explanations of the prior increase in unemployment. One explanation held that the jobless rate before the mid-1970s was underestimated, thus providing an overly rosy description of the labor market situation in Switzerland. Persistent underestimation occurred because of the large number of workers without unemployment insurance who were not registered with the regional unemployment centers; when losing their jobs, therefore, they were not included in the official unemployment statistics. (Fluckiger, p. 371) In fact, one source lists employment statistics that imply unemployment rates of less than one percent in the 1970s. (Mitchell, p. 164) It was only after 1977, with the introduction of compulsory unemployment insurance that forced every worker to register with a local employment agency, that unemployment statistics tended to give an accurate picture. As a result, the underestimation of the true unemployment problem is now a thing of the past. Moreover, in the past many foreign guest workers tended to leave the country in the event of a major economic recession. The situation has now changed not just with the introduction of unemployment insurance, but also by a 1992 change in the legal status of foreign workers that allowed them to gain permanent residency status and thus be counted as unemployed.

Although the number of jobless claims began to decrease in the latter half of the 1990s, some researchers have questioned whether the decline in the unemployment rate was permanent and would persist. Some have claimed that it was a change in unemployment benefits policy that was the cause of the decrease:

Employment recovered further, and the unemployment rate continued to fall sharply, to 3.0 per cent in March 1999. However, a large part of the fall was due to reforms, such as the tightening of unemployment benefit eligibility and the implementation of active labour market programmes, many of whose participants are not counted as unemployed. (author's emphasis added, OECD, p. 123)

Numerous other explanations in addition to statistical underestimation, the modification in the legal status of the foreign labor force, and changes in unemployment benefits policy have been offered. As summarized by Fluckiger, they include such factors as the decreasing cyclical sensitivity of Switzerland's labor force, which is partially explained by the more stable and permanent nature of jobs in Switzerland. Still other explanations of the prior hike in the unemployment rate include increasing female participation in the labor force and increased reporting to the employment offices as a result of compulsory unemployment insurance. (Fluckiger, pp. 371–74)

As of the year 2000, the problem of unemployment in Switzerland is virtually nonexistent, as evidenced by its unemployment rate of only two percent. This low rate may nevertheless represent only a temporary occurrence in a country that was surprised by the sudden increase in the unemployment rate, a country which enjoyed "a slow but steady recovery after seven years of stagnation." ("Swiss Economy...", p. 2) To determine whether the jobless rate is likely to increase in the future or whether the experience of the mid-1990s was simply a temporary effect that could be well explained, one has to determine whether the
hike in Switzerland's unemployment rate represented a structural change of the labor market. To do this one must go beyond the post-hoc observation of facts and analyze empirically the number of jobless individuals observed over time. Using statistical analysis, in the following sections I will show that the labor market in Switzerland did not deteriorate during the '90s, but rather that it underwent a structural change that was influenced by the change in the foreign labor policy and increased female participation in the labor force.

Model Specifications

In 1958 A.W. Phillips derived a relationship (Phillips, pp. 283-99) that allowed him to investigate the dependence between money wages and unemployment in the United Kingdom from 1861 to 1957. Phillips found that changes in money wages were well explained by the level of unemployment. Following a more basic Phillips curve relationship presented in a typical intermediate level macroeconomics textbook (e.g., Mankiw, pp. 51-69) and using the following equation, we can similarly illustrate the link between inflation and unemployment rates:

\[ \pi_t = \pi' - \beta(U_t - U^*) + e_t \]  

where \( \pi \) and \( \pi' \) are the rates of inflation and expected inflation respectively, \( U_t \) and \( U^* \) are the unemployment rate and the equilibrium unemployment rate, and \( e \) is a random error term, which includes the effect of supply shocks on \( \pi \). This simplified model illustrates two economic principles: that inflation increases when \( U \) falls below \( U^* \), the equilibrium unemployment rate; and that \( \pi \) and \( \pi' \) are equal in long-run equilibrium. A regression model based on the Phillips curve relationship can also be formulated. It captures a concept similar to the one presented by equation (1), but is specified in the following way:

\[ U_t = a_0 + a_1 \cdot p_t + a_2 \cdot U_{t-1} + e_t \]  

where \( U_t \) and \( U_{t-1} \) are unemployment rates during the current and previous periods respectively, and \( p_t \) is the percentage price change. Considering that a lot of attention has been paid to persistence in unemployment rates, as pointed out by Barro (pp. 32-37), the a priori value of the coefficient on lagged unemployment (\( a_2 \)) is one. The hypothesized value of this coefficient follows readily from (1). The unemployment persistence expressed by the regression coefficient's being close to unity is motivated by the effect that a change in unemployment observed during the preceding time period, everything else constant, would have on the current unemployment rate. Persistence implies that over time the change in the lagged unemployment rate translates to a similar change in the current unemployment rate.

The data set utilized in this paper is drawn from Switzerland’s Federal Statistics Office, which collects and publishes data from various federal offices on its official database (STATWEB).

Results

By utilizing the method of ordinary least squares, the values of the regression coefficients can be estimated. The regression results for equation (2) are presented below in Table 1, and Figure 2 provides a plot of the observed and estimated values of unemployment. Table 1 suggests that for the time period under review changes in the monthly level of the unemployment rate are well explained by the inflation rate and the unemployment level that occurred during the preceding time period. The choice of the model is supported by the high value of the coefficient of determination (\( R^2 \)). The estimated coefficients for inflation and the lagged unemployment level suggest that, holding other factors constant, a one percentage point increase in inflation in the current month would on average lead to a .06 percentage point increase in the unemployment rate, while a one percentage point change in the level of unemployment during the previous month on average would translate to a .98 percentage point increase during the current month.

As illustrated by the \( t \) statistics and \( p \) values, all coefficients except for the intercept term are significant at the standard (.01) significance level. Moreover, as reported in the Appendix to this paper, we do not reject the hypothesis that the coefficient for the lagged unemployment is equal to one, which agrees with the theoretical expectations about the persistence of unem-

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1For a more detailed review of the regression results and the hypotheses tests, refer to the Appendix.
Phillips Curve Regression Results, January 1989–September 1999

\[ U_t = \alpha_0 + \alpha_1 \cdot p_t + \alpha_2 \cdot U_{t-1} + e_t \]

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>( \alpha_0 )</th>
<th>( \alpha_1 )</th>
<th>( \alpha_2 )</th>
<th>( \rho )</th>
<th>( R^2 )</th>
<th>( F_{2,125} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( t )-values</td>
<td>0.062</td>
<td>0.062</td>
<td>0.981</td>
<td>0.700</td>
<td>.994</td>
<td>10583.79</td>
</tr>
<tr>
<td>( p )-values</td>
<td>0.979</td>
<td>2.624</td>
<td>57.608</td>
<td>11.053</td>
<td>0.328</td>
<td>0.009</td>
</tr>
</tbody>
</table>

Employment rates. The large value of the \( F \) statistic indicates that the hypothesis of the estimated coefficients in the model being simultaneously equal to zero, and thus not possessing any explanatory power, should be rejected.

For purposes of illustration, the plot of fitted and actual values of the unemployment rate over time is presented in Figure 2. Figure 2 reveals a close fit between the values predicted by the regression model and the actual values of the unemployment rate, while giving a more detailed look at the ability of the relatively simple Phillips curve regression model to explain the pattern of unemployment in Switzerland over the period studied.

In order to test for the occurrence of structural change in Switzerland’s labor market, I next used the test of model stability proposed by Brown, Durbin, and Evans. (Brown et al., pp. 149–92) This test is usually utilized for time-series data and can be used when one is uncertain about when the structural change has taken place. The hypothesis being tested is that the estimated regression coefficients of equation (2) are the same in every time period under review. The test is performed by plotting the cumulative sum of residuals (CUSUM) and residuals squared (CUSUMSQ) obtained from the regression model along with the confidence bounds for each sum. The hypothesis of model

**Figure 2**

Plot of Monthly Unemployment Rate Values Estimated from the Phillips Curve Relationship
stability is rejected if the cumulative sums stray outside the confidence bounds. CUSUM and CUSUMSQ tests are illustrated in Figure 3.

As revealed by Figure 3, both of the tests cast doubt on the hypothesis of parameter stability and indicate the occurrence of a structural change in Switzerland’s labor market in the mid-1990s. The Phillips curve model successfully predicts the unemployment rate with a great level of precision; however, it fails to capture the effects of the structural change that occurred during the last decade.

Discussion and Conclusions

The significance of the empirical results obtained in the previous section of the paper is better understood when considered in the context of Switzerland’s labor environment as influenced by the forces directly affecting the unemployment rate.

Only 59 percent of workers in Switzerland are covered by collective bargaining agreements, and only one-third of the agreements contain a minimum wage clause. (“Minimum Pay Setting....,” p. 28) (In Switzerland, as in Austria, minimum wages are established through the process of collective bargaining.) The fraction of the labor force that is unionized in Switzerland is relatively low within the European context, especially when compared to unionization rates above 90 percent in neighboring Germany and Austria.

The notion of “cooperative labor relations,” which has been defined as the “private sector solution to the unemployment problem” (Danthine and Lambelet, p. 168) or as “industrial peace” (“Industrial Relations Background,” p. 31), tends to alleviate the unemployment problem in Switzerland by reducing the incidence of strikes and lockouts. The so-called paix du travail, a concept of industrial peace that dates back to 1937, enforces labor conflict resolution through wage or interest labor arbitration if negotiations fail.

Moreover, the process of wage bargaining in Switzerland is highly decentralized in the major industries. As noted in the European Industrial Relations Review:

Switzerland has a very differentiated bargaining structure whose geographical and sectoral variation is associated with a heterogeneous and incomplete system of regulation. (“Industrial Relations Background,” p. 31)

Decentralization, in addition to geographical diversification of the industries, implies a higher job-finding rate for unemployed individuals without the need to relocate. (Danthine and Lambelet, pp. 171, 176)

In light of the low unionization rate and highly efficient, almost unnoticeable bargaining mechanisms, many were caught by surprise in the earlier half of the 1990s when Switzerland experienced an economic recession and the
unemployment rate increased. During economic recessions companies in Switzerland typically reduce working hours instead of laying off workers. This practice naturally leads to "partial unemployment," which is not captured by the unemployment rate. However, if Switzerland's economy experiences recessionary pressures, depending on the extent of the economic slowdown, adjusted wages and layoffs initially affecting foreign workers are implemented. (Danthine and Lambelet, p. 169) This practice is induced by a policy limiting the number of foreign workers legally permitted to work in Switzerland, while imposing a minimum wage paid to the foreign labor that has to be similar to that of native workers in the comparable industry ("Minimum Pay Setting...", p. 28) Until the mid-1990s Switzerland tended to "export" its unemployment during periods of economic recessions. However, in 1992 a change in the legal status of the foreign labor force allowed more workers in the technical sectors and foreign individuals with higher levels of education to gain permanent residency status and therefore report to the regional unemployment centers if necessary. Hence the unemployment hike in the 1990s is no longer surprising when considered in the context of this change in Switzerland's foreign labor policy.

Unemployment, as noted by some observers, should have never represented an economic challenge for Switzerland because of a benefits system that is hard on the unemployed. As mentioned earlier in the paper, most of the unemployment programs force participants out of the unemployed category by making the receipt of benefits conditional on enrollment in active labor market programs. (OECD, p. 123)

This kind of benefits policy, in turn, suggests a labor market with a high elasticity of labor supply where, if aggregate demand decreases, women and unskilled workers withdraw from the labor force (thus forcing the unemployment rate down) more rapidly than in other countries. (Danthine and Lambelet, p. 170)

However, as noted by several authors (for example, Fluckiger, pp. 371–74), labor force participation by both females and foreigners has generally increased and, as a result, so also has the average amount of unemployment benefits paid over the course of the last decade. Bierhanzl and Gwartney have suggested further that the "full impact" of this change, amplified by increased unemployment in the mid-1990s, has yet to be determined. (p. 51) In any case, one result stands out from the empirical findings of this paper: the hike in unemployment in Switzerland during the 1990s is well explained by the changes in wages and price levels. However, the increased female and foreign participation in the labor force represents a structural change in Switzerland's labor market during the 1990s.

It should be evident that the Phillips curve relationship is a model that is applicable to a great variety of regional and economic settings; however, empirical research utilizing this model has not been conducted in the case of Switzerland. Further research aimed at determining the timing of the structural change in the labor market and quantifying the effects of other possible causes of increased unemployment in Switzerland would provide an improved understanding of the behavior of this country's economy in the 1990s.
Appendix

Estimation Methods

In this section a more detailed review of the estimation techniques employed in the paper for the purposes of empirical analysis is presented. By initially utilizing ordinary least squares (OLS) estimation techniques for the autoregressive model (2), with the expectation that the results could be biased and inconsistent, I applied the Durbin $h$ statistic test (Durbin, pp. 410–21) to check for the presence of serial correlation in the OLS estimation. This test indicated that the relationship presented by equation (2) contains autocorrelated error terms. Therefore, I used the Cochrane-Orcutt iterative procedure (Cochrane and Orcutt, pp. 32–61), under the assumption of the first-order autoregressive scheme, AR(1). The coefficients for regression model (2) are estimated from the generalized difference equation with the Prais-Winsten transformation, a technique commonly used to obtain estimators with all the optimum properties — namely, BLUE (Best Linear Unbiased Estimators).

First, the Cochrane-Orcutt iterative scheme is utilized in order to obtain the estimated value for the autocorrelation coefficient. The procedure converges after four iterations. The generalized difference equation with the Prais-Winsten transformation was presented in a form similar to that of the Phillips curve regression model (2), with autocorrelation-corrected output listed in Table 1. Table 1 also reveals that all the coefficients, except for the intercept term, are statistically significant from zero at the 1% significance level (the $p$ values are 0.009 and 0.000 respectively). The null hypothesis that the regression coefficient of the lagged unemployment is significantly different from 1 cannot be rejected at the standard significance level ($t$ = -1.116). The overall significance of the autocorrelation-corrected model is high, as reflected by the value of the $F$ statistic that is also significant at the 1% level (the $p$ value is 0.000), which allows the rejection of the null hypothesis that both of the slope coefficients are simultaneously equal to zero. The Durbin $h$ statistic allows us to reject the hypothesis that there is first-order autocorrelation. The value of the autocorrelation coefficient estimated by the Cochrane-Orcutt iterative scheme further suggests the presence of positive autocorrelation in the uncorrected OLS estimation.
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