

What Determines European Youth Unemployment?

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Introduction:

High European unemployment has been a problem of international significance for over two decades. Unemployment rates skyrocketed in Europe in the 1980's, and the scarcity of jobs expanded over all sectors. Although, in recent years European unemployment has improved, it is still suspended well above the 4.5% that exists in America today. The consequences of the European unemployment problem are only magnified further when the data is studied according to age group. Young Europeans (aged 15 to 24) suffer from unemployment rates more than double and triple those of the average populace. Clearly, the implications of sky-high youth unemployment in Europe are serious and far-reaching, which makes it a necessary topic of study.

The urgency and seriousness of high European youth unemployment is so profound because it affects such a wide pool of people. Most directly affected are the youth of Europe. Widespread joblessness is commonplace across the continent, leaving many young Europeans well into their twenties without any job experience to their credit. Thus the continent's youth depends and relies on financial support from their families. Furthermore, many travel across native countries and Europe to find a suitable occupation. Secondly, the European economy has a great interest in this topic. Obviously, the future of its economy resides in its youth. Unfortunately, the future leaders of Europe are most likely currently unemployed; hence are missing out on invaluable job experience. Furthermore, if this problem persists, the lack of experience amongst young European workers will have profound consequences for the continent. Moreover, the unemployment crisis will affect all European allies and trade partners. In this ever-expanding global market the implications of the crisis will become increasingly grave as the years progress.

The youth unemployment crisis is also of great importance as an economic phenomenon. Europe holds great economic power. The majority of G7 countries are European. These are strong

economies with growing GDPs, which are suffering from widespread unemployment amongst their youth. Thus it is an issue for all of those in the field of macroeconomics. It is essential that the possible dependent variables are measured and tested to see which variables most strongly determine unemployment. Hopefully, a solution can be found for this economic crisis, which will help Europe cope with its current problem, and also help other countries, which may stumble upon the same misfortunes in the years to come.

Literature Review:

Regardless of source or study, unemployment is undeniably high in Europe when compared to its historical record and to American unemployment. After World War II European welfare states enjoyed a period of low unemployment; however, this ended abruptly with an outbreak of persistently high unemployment that has spanned decades. The general trend of unemployment for EU15 countries consists of a steady rise in unemployment from 2% in 1960 to 8% in the 1980's. From the end of the 1980's up until today the unemployment rate has almost leveled, with the exception of cyclical declines at the very end of the 1980's and 1990's (Blanchard). Although the unemployment crisis faced by individual European countries can be viewed generally through overall trends of European unemployment, it is also important to recognize the heterogeneity amongst rates in particular countries.

By examining the rates of individual countries, it is evident that the European unemployment problem became a serious issue with its outbreak in the early to mid 1980's. For instance, until 1979 Ireland and Portugal were the only countries amongst the 20 most developed in Europe to have unemployment rates above 8%. Unbelievably, 11 out of those same 20 most developed countries exceeded 8% by 1983, and six of them reached double-digits. Ireland took the lead with 14.9%. (Howell 3). France's unemployment rate was not far behind, as it has been lingering at or above 10% since the mid 1980's. During the mid 1980's and 1990's Spanish

unemployment reached close to 20%. Moreover, almost all countries continued to experience rising unemployment rates through the early 1990's. When the statistics of the 1990's are compared to the past, the results are quite alarming. In the late 1960's the median unemployment rate was 1.9%, and by the early 1990's it had escalated to 8.8%. Moreover, the standard deviation of unemployment rates had risen from 1.2 – 2.2 in 1960-1970 to 3.3 – 4.5 by 1990. Therefore, not only had unemployment increased, but the escalation was higher in particular countries, namely Western Europe (France, Germany, Spain and Italy). (Howell 5). The problem in Europe stabilized in the next decade, but persists into present day.

While America enjoyed low unemployment rates of 5.6% to 4.9% between 1995 and 1997, members of the Organisation for Economic Co-operation and Development (OECD) in Europe still dealt with figures ranging from 9.7% to 10.1%. In fact, during that time frame, the two major economic powers on the continent, France and Germany, suffered from rates of 9.5%. In 1997 Germany was the largest and most powerful continental European economy, and also had 4.5 M Germans unemployed. During that time frame, French unemployment was just over 3 M. In total, over 18 M were unemployed in the EU in the late 1990's (Horn). Over the past decade unemployment has decreased in Europe. For example, in 2004 EU unemployment fell to 8.6%.; however, this was well above the American unemployment rate of 5.1%.

However, falling European unemployment rates are misleading. European unemployment rates from different countries are usually lumped into one deceptive figure that may suggest that European high unemployment has subsided. Yet the truth of the matter is that the high levels of unemployment in Western Europe are equalized by the low unemployment rates in Northern and Anglo Saxon Europe. For example, by the end of 2005 the United Kingdom, the Netherlands, Denmark, Ireland and Austria had rates lower than America. On the other hand, Western Europe, consisting of France, Germany, Spain and Italy, face unemployment rates well above the European

average. There are also significant differences amongst West European economies. For example, France and Italy's unemployment rates have been high since the outbreak of unemployment in the early 1980's. However, Italy's unemployment problem involves large regional differences, with Southern Italy experiencing much higher unemployment. Moreover, today Spain's unemployment has decreased since it hit its peak at over 20%, while the German unemployment rate is up since the early 1990's (Blanchard). Clearly, the trends of European unemployment rates are as unique as the countries they belong to; however, Europe does face an issue that is overarching - youth unemployment.

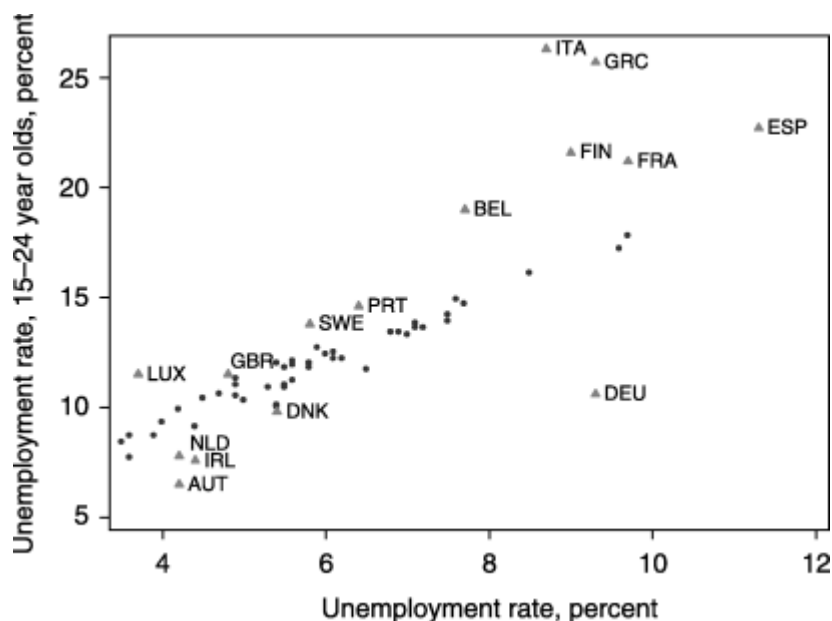
An additional trouble, which is also the topic of my thesis, is the large magnitude of unemployment amongst young Europeans. Unemployment rates for those aged 15-24 are at times four-fold the unemployment rate of the average European. In fact, according to authors Robert Horn and Philip Heap:

Unemployment has occurred while the population and labor force of most of Western Europe is aging. Since younger workers, who have higher-than-average unemployment rates, comprise a smaller share of the workforce, the reported unemployment rate should fall. Conversely, if demographics of labor force had not changed, the unemployment rate would be higher than is reported. Thus the poor unemployment record of the EU-15 would be worse (104).

According to the above had the youth population stayed as proportionately large over time, youth unemployment would be even worse in Europe. This fact only emphasized the problem of unemployment amongst young European workers. In fact, according to *The Economist*, in the late 1990's, half of Spanish workers under 24 years of age were out of work. Additionally, in Italy and France one in four young workers was unemployed. On the other hand, in Germany, Austria and Denmark, where the young workers enroll in apprenticeship programs, youth unemployment is less extreme (The Economist). While median European unemployment was at 5.3%, unemployment rates for young Western Europeans were four times this rate. For instance, female youth

unemployment was 22.8%, 27.2% and 30.9% in France, Spain and Italy, respectively. Male youth unemployment in these countries ranged from 18 – 23% (Howell 6). Youth unemployment is not unique to the 1990's; in fact it persists into present day.

Today youth unemployment is a particularly significant problem in certain European countries. In 2004 the OECD compared the unemployment rate for those aged 15-24 to the unemployment rate for those aged 15-64 in EU 15. In all but five countries (the Netherlands, Ireland, Austria, Germany and Denmark) the youth unemployment rate exceeds the overall rate. Italy, Greece, Finland, France, Spain and Belgium display the highest rates of youth unemployment.



Economists have written a library of literature concerning European unemployment and its possible causes. Experts have used demand and supply side arguments to justify their findings. Various theories have included the “insider-outsider” conflict, high unionization, mis-matched job skills, excessive hiring and firing costs and capital shortages. In the late 1990's rigidities in the labor market, such as unionization, employment protection laws and unemployment benefit entitlements became the orthodox view and the alleged causes of persistent unemployment amongst

European countries (Sargent). However, recent literature have re-tested the conventional causation variables, and found little evidence and correlation between these supply side variables and unemployment. This is a rather important turn in the European unemployment debate. For years protective labor market institutions were to blame for persistent unemployment. Today, the more recent literature has begun to study the possibility of demand side turbulence, such as the restructuring from manufacturing to a service industry, the introduction of new information technologies, and escalating international competition, which may cause unemployment in welfare states to take a turn for the worse.

The typical supply side variables that the OECD uses to explain European unemployment are unionization, employment protection laws and employment benefit entitlements. Unionization has been cited as a main determinant of unemployment according to the OECD, especially in welfare states. However, the recent trends in European Union density and unemployment rates do not agree with this traditional view. Firstly, union density has been rising since the 1980's in Northern European countries such as Germany, Belgium, Austria and Switzerland, where unemployment is low. On the other hand, union density in France, Italy and Ireland has decreased significantly since 1980. Unemployment in France and Italy remains high, while Ireland enjoys a low unemployment rate (Visser 42). Furthermore, the influence of unions on the labor market may be overstated due to the sizable portion of retired union members who retain their union membership after they leave the labor market. For instance, the proportion of retired workers who retain their union membership is 20%, 19.8% and 48%, respectively, for France, Germany and Italy (Visser 45). In 2005 the OECD claimed that France's strict employment protection laws should be reformed and become less stringent to ameliorate unemployment. However, strict protection laws and high unemployment do not always appear together. For example, the United Kingdom, which has very weak employment protection laws, has substantial youth unemployment, while Germany,

which has relatively low youth unemployment, is a conservative welfare state that has a strictly regulated apprenticeship program with job protection (Isengard 364). Moreover, high employment benefit entitlements are not always consistent with significant unemployment. Past studies, including Heckman (2003), blame a large portion of German unemployment on its net benefit replacement rates of 79%. Perhaps benefit replacement does play a role in unemployment, but it is puzzling that Denmark, the Netherlands, Switzerland and Sweden, which have net benefit replacement rates ranging from 80-85% all have had unemployment rates lower than Germany since 2005 (Howell 15). Furthermore, Howell, Baker, Glyn and Schmitt (2006) tested these traditional supply side variables and the only significant variable was unemployment benefits.

These findings happen to agree with the work of Ljungqvist and Sargent (1998). The findings of Ljungqvist and Sargent (LS) have become very influential in the European unemployment debate, and their model is consistent with the results of Howell, Baker, Glyn and Schmitt. In 1998 LS also challenged the orthodox view that unemployment stems mainly from supply side variables. They attribute consistently high European unemployment with economic turbulence, or a changing economic environment. Economic turbulence is defined as rapidly changing industrial structures or technology. LS compare the steady state of a welfare environment with *laissez-faire* to test their thesis. They found that during peaceful economic times the differences between the two states are minimal. Although there is a loss of efficiency in the welfare state, it is not significant. However, during economic turbulence, the shocks make the welfare state extremely vulnerable.

The key parameters of their model in the welfare state are unemployment compensation, which is calculated according to past earnings and the amount of human capital loss that results from job loss. Thus the reservation wage for a displaced worker in a welfare state is equal to a

percentage (0.93) of past earnings. Those without reservation wages (workers in the laissez faire market and workers without benefits in the welfare state) will have the maximum search intensity for a new job. When an economic shock occurs, such as a switch from a manufacturing to a service economy, displaced workers in the welfare state will not seek employment unless the new wage exceeds their reservation wage. As time progresses, their human capital continues to deteriorate and they are less likely to find a wage that will induce them to become re-employed.

LS use this model to explain the state of the European economy. Welfare states are called “time bombs” that are waiting to explode in the next economic shock (Sargent 546). The displaced workers in the welfare state that refuse wages that do not exceed the reservation wage are those that have been previously employed.

In 2005 den Haan, Haefke and Ramey (DHR) challenged LS’s findings. They argue that during economic turbulence workers are more reluctant to leave their jobs. This assumption holds if increased turbulence has a small effect on workers’ skills (den Haan1361). Thus their findings challenge the idea that economic turbulence causes European unemployment. Their paper sets up a framework where workers will hold on to jobs during economic turbulence and their skills increase during employment. Furthermore, DHR believe that turbulence and destruction rates (workers leaving jobs) will be negatively correlated. The model created by DHR may more aptly describe the current political economic situation in Europe. *The Economist* explains the politics behind Europe’s unfortunate economic problem, and how these politics hamper labor market reforms. As DHR assumed during economic turbulence, which has occurred over the past three decades, workers are less willing to depart from their jobs, and they are more willing to vote for politicians that will promise increased job protection laws. Currently, the employment rate far exceeds the unemployment rate by far, thus there is more political support for job protection (*The Economist*). Additionally, legislation that protects workers also increases the costs of firing employees.

While most of the recent literature has sided with the supply side argument, Graeme Chamberlin offers a unique explanation that involves supply and demand side components. In 2006 Graeme Chamberlin's bargaining model explained rising European unemployment throughout the 1990's as a combination of demand and supply side variables. He states that while the demand side is often ignored, institutions and shocks are essential to describing unemployment in OECD countries. Chamberlin's model states that wages are the result of bargaining on behalf of employees and employers. These two sides agree upon a relative wage, which is determined by what Chamberlin calls a contract curve. However, the contract curve can be shifted according to the changing economic environment. This is the crux of his argument. He blames the initial rise in unemployment on the deterioration of the product market that shifted the contract curve, while he states the persistence of unemployment was due to supply side rigidities (Chamberlin 89).

The above articles try and explain the causes of European unemployment in general. The literature on European youth unemployment, which is not nearly as substantial as unemployment in general, includes the same general theories of unemployment mentioned above along with more specific causes. Much of the literature has named employment protection laws as a chief culprit in youth unemployment. In industries where a set rate is assigned to workers regardless of experience level, older workers will be employed at higher rates. On the other hand, low paying industries will hire more young workers, who are willing to work at a lower rate. In fact an early study from 1986 found that youth employment is adversely related to adult pay in six European countries . That data that was used ranged from 1972 to 1984. This same study standardized youth employment and adult pay variables and found that an increase of ten percentage points in the relative pay of adult men at a specific job is associated with a twenty to thirty percentage point fall in relative youth employment in that same job (Paul). Currently, employment protection laws are still named as important determinant of youth unemployment. For example, young French workers were

displeased with Prime Minister De Villepin's suggested labor reforms in 2006 because of the premise stated in Ryan's study. In March 2006 De Villepin proposed removing employment protection for the young, while keeping protection for older workers (Munchau). His decision was based on the consensus that labor protection laws caused unemployment. However, his decision aroused criticism in recent economic literature as many economists, including Olivier Blanchard, disagreed with De Villepin's thinking. Removing labor protection for one specific group will only exacerbate the unemployment rate for that group.

The literature has also focused on organizational and institutional variables that may affect youth unemployment. In Bettina Isengard's case study of German and British youth unemployment, the degree of unemployment was a function of national institutions. These national institutions are a result of different cultural philosophies, socioeconomic conditions and class structures. Bettina found that Germany's conservative welfare state, which has a highly regulated apprenticeship program, is responsible for low youth unemployment. On the other hand, Britain's liberal welfare state, which lacks a safety net for jobless youths, causes higher youth unemployment. Furthermore, the German 'dual system of training', which combines regular classroom learning with specific work place training, has been applauded for decreasing youth unemployment (*The Futurist*). Thus German youths are more likely to be employed in the job that they trained for. On the other hand, Britain's schools system is more general, and occupational skills are to be learned on the job. Thus young workers are often employed in jobs for which their skills exceed also known as disguised unemployment (Isengard 363) Moreover, Denmark has one of the most generous support programs for the unemployed and employed youths in all of Europe, thus it also has one of the lowest levels of poverty amongst households in the EU. Today the Danish system includes voluntary unemployment insurance, which are run by trade unions and heavily subsidized by taxes. It also

provides high replacement rates for low income groups, including those under the age of 25. (Clasen 93). Danish policies and their results clearly contrast the traditional remedies for European unemployment by achieving low unemployment with supply side rigidities.

I plan to test the effect of European unemployment variables from both the supply side and the demand side on European youth unemployment (aged 15-24). There have been many statistical studies run on European unemployment in general. The literature encompasses a litany of arguments laying blame on employment benefit programs, trade unions, employment protection laws, institutions and economic shocks. However, these may not all apply to European youth unemployment specifically. It is important to differentiate the causes and the degree of causation of youth unemployment from unemployment in general. Unemployment statistics will be acquired from OECD.com, as well as the majority of independent variables.

Data and Methods:

My dependent variable is the European youth unemployment rate, which was obtained from OECD statistics. The youth unemployment rate measures unemployment amongst those aged 15 to 24. The OECD defines annual unemployment as those who were without work during the reference point, and were also available to work and seeking employment. The data was obtained by dividing the number of employed, expressed in thousands of persons, by the labor force, also expressed in thousands of persons. The earliest available data is from 1961; however, data for all countries does not date back that far. Data is available for all major European countries from the early 1970's to present day.

My first independent variable quantifies unemployment benefits, which are measured by the OECD ordinal variable called "summary measurement of benefit entitlements". The "summary

measurement of benefit entitlements” variable is defined as the average of the gross unemployment benefit replacement rates of two earnings levels, three family situations and three durations of unemployment of a nation. The OECD defines replacement rate as the ratio of an individual's, or in this case a given population's average pension during the stated reference period and the average income of the stated reference period (<http://stats.oecd.org/glossary/detail.asp?ID=5293>). The pensions and incomes were measured in the countries currency, and then converted into internationally comparable statistics by OECD. The International Comparison Program (ICP) is a global initiative that converts statistics into comparable price levels. These comparable statistics, also referred to as Purchasing Parity Power estimates, which consider the cost of a common basket of goods across countries to compare economic and social conditions (<http://stats.oecd.org/glossary/detail.asp?ID=6280>).

Under the orthodox view of European unemployment, unemployment benefits are one of the key culprits of the economic problem. I included this variable as a determinant of European youth unemployment, because I wanted to see if this supply side variable also affects the very young. It is an interesting aspect to test because normally older workers, who have worked in the past, collect unemployment benefits. Most of the young and unemployed in Europe have never had an occupation. However, it may still have an affect on youth unemployment, but in a negative way. That is if a nation has low unemployment benefits, older workers are more willing to work and youth unemployment rises. On the other hand, it could also have a positive relationship. If firms and governments are stuck paying out large amounts of unemployment benefits they may not be able to afford to create or sustain job positions. Thus unemployment amongst younger workers will rise. Therefore, I included this variable primarily to see if the orthodox view of European unemployment followed suit for youth unemployment in particular. Secondly, I included the variable to

differentiate between a possible negative or positive relationship between the independent and dependent variables.

My second independent variable measures union membership amongst the national population. The union density variable measures the degree of union membership in a given country. I have obtained the percentage of union density for European countries from 1960 through 2002 from the OECD statistical database. Union density is defined as the proportion of union members collected a wage or salary (Visser 38).

I have included this supply side variable because it is also included as one of the chief causes of European unemployment under the orthodox view. Many economists believe that high union membership is responsible for widespread joblessness. Furthermore, it is difficult for young non-member workers to get jobs in highly unionized occupations. Thus a positive relationship is expected between union membership and youth unemployment.

My third independent variable measures the interest rate of each country. I obtained the interest rate of government long-term bond yields, per cent per annum, which is a period average put forth from the IMF. The interest rates represent yields to maturity of government bonds or other bonds that would indicate longer term rates (IMF)

(http://unstats.un.org/unsd/cdb/cdb_series_xrxx.asp?series_code=6310). The data was obtained from the UN website. I included this independent variable to gauge whether youth unemployment follows the same path as the interest rate, or if it is not at all related to it. According to macroeconomic theory, as the interest rate falls firms will invest in more capital and hire more workers. Thus the interest rate and youth unemployment should be positively correlated.

My fourth variable measures the production of total industry for each country in thousands of tons. The data was obtained from the OECD database. Similarly, my fifth variable measures manufacturing production for each country in thousands of tons. The data was obtained from the

OECD database. For production of total industry and manufacturing, data includes indices of industrial production for total industry, manufacturing, energy and crude petroleum; and further integration of manufacturing production for intermediate goods and for investment goods and crude steel (www.oecd.org). The data has been made internationally comparable across all countries. The data is available monthly and are presented as an index with 2000 as the base year.

I included the total industry variable and the manufacturing production variable to measure economic shock. The theory being that Europe has switched from a manufacturing to a service economy resulting in a mismatch between workers and needed job skills. Thus workers with outdated skills are left unemployed. Those that believe that the demand side is responsible for unemployment support this theory. Therefore as the manufacturing production and total decreases, unemployment should rise.

My sixth independent variable measures the degree of employment protection legislation. The OECD measures this variable using the “Strictness of Employment Protection Legislation” variable, or EPL for short. The OECD uses the EPL term to refer to all types of employment protection measures from legislation, court rulings, collectively bargained conditions of employment and customary practice (<http://stats.oecd.org/glossary/detail.asp?ID=3535>). EPL can fall under three basic categories: 1. employment protection of regular workers against individual dismissal; specific requirements for collective dismissals and 3. regulation of temporary forms of employment. A four-step process is used to derive the EPL strictness variable, which are cardinal summary indicators. First the inputs, which are measured in units of time, numbers and scores on an ordinal scale are converted into comparable cardinal units that are normalized on a scale ranging from 0 to 6. Higher scores represent stricter legislation. In the next three steps successive weighted averages are formed, which construct three sets of summary statistics (or subcomponents of strictness) that relate to increasingly higher measures of EPL strictness. Lastly, an overall summary

indicator is calculated for each individual country according the three subcomponents (<http://www.oecd.org/dataoecd/7/22/38940931.pdf>). I included employment protection legislation as an independent variable because it is the third key cause of European unemployment according to the orthodox view. The idea is increased employment protection legislation will make it difficult to fire current employees, thus unemployment will rise. Thus EPL should have a positive relationship with European youth unemployment.

Results:

I chose to study six European countries that had the available data on the independent variables for the years of 1970-2003. These countries are France, Germany, Norway, the Netherlands, Sweden and the United Kingdom. The descriptive statistics tell a lot about the youth unemployment problem in Europe. France has the highest youth unemployment with an average rate of 18.1%, while Germany has the lowest average with 6.9%. This is not surprising considering that Germany has a well-developed apprenticeship program that eases the transition from school to the workplace. The majority of the countries have a youth unemployment rate of about 10%. The rates vary from country to country, as the problem is more severe in certain geographical areas, and varies across time. The standard deviation is about 5 or lower for all countries, except France (7.9). Thus the spread of data is rather tight.

As for my independent variables, the Netherlands offers by far the highest average employee benefits, with France, Germany and Norway following. Sweden has the highest average union density with 76.7% of its labor force belonging to a union. The average interest rates for the six countries varied from 6-10%. The United Kingdom has the highest average figures for total manufacturing and total industry measured in thousands of tones, while Germany has highest maximum values for these two variables. These statistics were expected as Germany has become the most powerful economy after its reunification.

I chose to run a panel data regression on my observations, which combined all observations for all six countries in the regression. According to the F-value (16.43), at least one of the predictors are significant. Four out of five of my independent variables were significant at the .10 level, and three out of five were significant at the .01 level. OECD Benefits was significant at the .10 level. A one unit increase in OECD Benefits leads to a 0.0648 increase in youth unemployment. This positive relationship denotes that perhaps as benefits rise firms are less reluctant to hire additional workers. Union density, which was significant at the .01 level, indicates that a one unit increase in union density leads to a -0.14705 decrease in unemployment. I expected a positive relationship between these two variables. A negative relationship may mean that more union density makes it harder for firms to fire workers. The interest rate was significant at the .01 level and shows that a one unit increase in the interest rate will lead to a 0.73196 increase in unemployment. This positive relationship was expected. Lastly, the results for total manufacturing and total industry are puzzling. Total manufacturing is significant and has a positive parameter, while total industry is not significant and has a negative parameter. Unexpected signs are an indication of collinearity. I have not yet tested for collinearity, because the equation was significant according to the F-test and a couple of the signs are unexpected, I believe I will have to correct for multicollinearity in the future.

I also ran regressions on the individual countries. I found that there is also evidence of multicollinearity in the data of individual countries. For example, the regressions for France, Germany and the Netherlands the parameters for manufacturing and industry are opposite. I hypothesized that as manufacturing and industry increased, more jobs will be created and unemployment will decrease.

The R^2 statistics for the individual countries vary greatly. Germany has the lowest with .48, while the United Kingdom has the highest with .94. Both Sweden and the United Kingdom have very high R^2 statistics, and have less than 30 observations. Therefore, their high R^2 statistics are

misleading, and these countries should probably not be analyzed individually unless more observations can be found for them.

Conclusion:

My first panel data regression analysis offered some interesting insights into youth unemployment in Europe. I believe that my results best agree with the study done by Graeme Chamberlin, which states that a combination of supply and demand side variables have lead to high rates of youth unemployment in Europe. This is evident because supply side variables like union density and employee benefits were significant, and so was the total manufacturing variable, which measures the economic shock on the demand side. I believe the independent variables will prove to accurately predict rates of youth unemployment. However, my model has not been perfected, and therefore cannot be used for prediction. There is an evident collinearity problem that must be addressed. Heteroskedasticity and auto-collinearity need to also be tested for before my model is complete.

Descriptive Statistics:

Germany	Mean	STD	Max	Min
Youth Unemployment	6.9	3.516094	15.2	0.5
Benefits	28.05556	1.452966	30	24
Union Density	31.9	3.796012	36	23.2
Interest Rate	6.705946	1.920711	10.4	3.2
Total Manufacturing	81.35405	14.55752	113.2	59.7
Total Industry	82.95405	13.37432	112.2	62.6

France	Mean	STD	Max	Min
Youth Unemployment	18.1	7.9	28.1	3.2
Benefits	33.4	6.5	44	23
Union Density	14.5	5	21.69	9.6
Interest Rate	8.4	3.1	15.78	3.46
Total Manufacturing	83.4	11.2	102.5	60.1
Total Industry	82.2	12.6	102.9	57.2

Norway	Mean	STD	Max	Min
Youth Unemployment	9.556	2.871132	13.9	4.7
Benefits	31.61765	10.90736	43	8
Union Density	56.1	2.017711	58.5	51.9
Interest Rate	8.279143	3.150461	13.6	3.3
Total Manufacturing	89.82857	7.769873	105.3	778.4
Total Industry	66.75714	24.65643	100	30.6
Netherlands	Mean	STD	Max	Min
Youth Unemployment	9.964706	5.682716	25.2	1.5
Benefits	50	5.131601	57	35
Union Density	29.5	5.490862	37.8	22.1
Interest Rate	7.126667	1.964348	11.6	3.4
Total Manufacturing	75.30833	17.26369	104.5	49.6
Total Industry	81.90833	13.05862	104.7	58.9
Sweden	Mean	STD	Max	Min
Youth Unemployment	9.13	5.688412	22.7	2.9
Benefits	23.94444	6.637316	30	6
Union Density	76.7	4.3454	82.5	67.7
Interest Rate	8.781622	2.996054	13.5	3.4
Total Manufacturing	69.51667	19.03545	108.4	49.3
Total Industry	69.52162	20.98218	112	47.2
United Kingdom	Mean	STD	Max	Min
Youth Unemployment	13.28095	2.411767	19.7	10
Benefits	17.90909	1.411149	21	16
Union Density	37.2	5.758581	47.5	30.4
Interest Rate	7.439565	2.411751	11.1	4.3
Total Manufacturing	91.5	7.297506	100	75.2
Total Industry	90.4	7.544293	100	73.1

Table 1. Panel Data

Variable	Parameter
OECD Benefits	0.0681 (1.89)*
Union Density	-0.14705 (-6.03)***
Interest Rate	.73196 (3.97)***
Total Manufacturing	.11046 (3.46)***
Total Industry	.11046 (-0.54)
n=163	
$R^2 = 0.3435$	
F=16.43	
Pr>F = 0.0001	

t-stats in parentheses. **** = significant at .01, ** = significant at .05, * = significant at .10

Youth Unemployment_{it}: The unemployment rate of those aged 15 – 24 in country i for year t.

OECD Benefits_{it}: Defined as the average of the gross unemployment benefit replacement rates in country i for year t.

Union Density_{it}: Measures the degree of union membership as the proportion of union members that collect a wage or salary in country for year t.

Interest Rate_{it}: The interest rate of government long-term bond yields, per cent per annum, which is a period average for country i during year t.

Total Manufacturing_{it}: Total production of manufacturing measured in thousands of tones for country i in year t.

Total Industry_{it}: Total production of industry measured in thousands of tones for country i in year t.

Table 2: France

Variable	Parameter
OECD Benefits	-0.99032 (.48)
Union Density	-0.35568 (-3.25)***
Interest Rate	1.14189 (-0.41)
Total Manufacturing	-4.12629 (-2.34)**
Total Industry	4.61124 (2.36)**
n=32	
$R^2 = 0.9024$	
F=48.10	
$r > F = 0.0001$	

t-stats in parentheses. **** = significant at .01, ** = significant at .05, * = significant at .10

Youth Unemployment_{it}: The unemployment rate of those aged 15 – 24 in country i for year t.

OECD Benefits_{it}: Defined as the average of the gross unemployment benefit replacement rates in country i for year t.

Union Density_{it}: Measures the degree of union membership as the proportion of union members that collect a wage or salary in country for year t.

Interest Rate_{it}: The interest rate of government long-term bond yields, per cent per annum, which is a period average for country i during year t.

Total Manufacturing_{it}: Total production of manufacturing measured in thousands of tones for country i in year t.

Total Industry_{it}: Total production of industry measured in thousands of tones for country i in year t.

Table 3: Germany

Variable	Parameter
OECD Benefits	-0.78007 (-1.79)*
Union Density	0.33057 (1.88)*
Interest Rate	-0.63539 (-1.78)*
Total Manufacturing	1.31681 (1.41)
Total Industry	-1.29614 (-1.27)
n=33	
$R^2 = .4893$	
F=5.17	
Pr>F = 0.0019	

t-stats in parentheses. **** = significant at .01, ** = significant at .05, * = significant at .10

Youth Unemployment_{it}: The unemployment rate of those aged 15 – 24 in country i for year t.

OECD Benefits_{it}: Defined as the average of the gross unemployment benefit replacement rates in country i for year t.

Union Density_{it}: Measures the degree of union membership as the proportion of union members that collect a wage or salary in country for year t.

Interest Rate_{it}: The interest rate of government long-term bond yields, per cent per annum, which is a period average for country i during year t.

Total Manufacturing_{it}: Total production of manufacturing measured in thousands of tones for country i in year t.

Total Industry_{it}: Total production of industry measured in thousands of tones for country i in year t.

Table 4: The Netherlands

Variable	Parameter
OECD Benefits	-0.11485 (2.48)**
Union Density	-2.60568 (-4.10)***
Interest Rate	1.52263 (2.20)**
Total Manufacturing	-2.17132 (-3.29)***
Total Industry	1.91302 (-2.88)***
n=31	
$R^2 = 0.5642$	
F=6.47	
Pr>F = 0.0005	

t-stats in parentheses. **** = significant at .01, ** = significant at .05, * = significant at .10

Youth Unemployment_{it}: The unemployment rate of those aged 15 – 24 in country i for year t.

OECD Benefits_{it}: Defined as the average of the gross unemployment benefit replacement rates in country i for year t.

Union Density_{it}: Measures the degree of union membership as the proportion of union members that collect a wage or salary in country for year t.

Interest Rate_{it}: The interest rate of government long-term bond yields, per cent per annum, which is a period average for country i during year t.

Total Manufacturing_{it}: Total production of manufacturing measured in thousands of tones for country i in year t.

Total Industry_{it}: Total production of industry measured in thousands of tones for country i in year t.

Table 5: Norway

Variable	Parameter
OECD Benefits	0.12442 (-1.11)
Union Density	0.77380 (2.25)**
Interest Rate	-0.62701 (-2.42)**
Total Manufacturing	-0.06503 (-0.50)
Total Industry	-0.00154 (-01.37)
n=29	
$R^2 = 0.5958$	
F=6.78	
$Pr>F = 0.0005$	

t-stats in parentheses. **** = significant at .01, ** = significant at .05, * = significant at .10

Youth Unemployment_{it}: The unemployment rate of those aged 15 – 24 in country i for year t.

OECD Benefits_{it}: Defined as the average of the gross unemployment benefit replacement rates in country i for year t.

Union Density_{it}: Measures the degree of union membership as the proportion of union members that collect a wage or salary in country for year t.

Interest Rate_{it}: The interest rate of government long-term bond yields, per cent per annum, which is a period average for country i during year t.

Total Manufacturing_{it}: Total production of manufacturing measured in thousands of tones for country i in year t.

Total Industry_{it}: Total production of industry measured in thousands of tones for country i in year t.

Table 6: Sweden

Variable	Parameter
OECD Benefits	-0.02967 (-0.75)
Union Density	0.09084 (0.78)
Interest Rate	0.79861 (5.39)***
Total Manufacturing	-0.34645 (-0.95)
Total Industry	-0.01412 (-0.04)
n=19	
$R^2 = 0.9220$	
F=29.92	
Pr>F = 0.0001	

t-stats in parentheses. **** = significant at .01, ** = significant at .05, * = significant at .10

Youth Unemployment_{it}: The unemployment rate of those aged 15 – 24 in country i for year t.

OECD Benefits_{it}: Defined as the average of the gross unemployment benefit replacement rates in country i for year t.

Union Density_{it}: Measures the degree of union membership as the proportion of union members that collect a wage or salary in country for year t.

Interest Rate_{it}: The interest rate of government long-term bond yields, per cent per annum, which is a period average for country i during year t.

Total Manufacturing_{it}: Total production of manufacturing measured in thousands of tones for country i in year t.

Total Industry_{it}: Total production of industry measured in thousands of tones for country i in year t.

Table 7: United Kingdom

Variable	Parameter
OECD Benefits	0.97805 (5.60)***
Union Density	-0.92133 (3.23)***
Interest Rate	.53322 (2.65)**
Total Manufacturing	-0.46582 (-2.64)**
Total Industry	-0.17422 (-0.86)
n=19	
R ² = 0.9467	
F=46.19	
Pr>F = 0.0001	

t-stats in parentheses. **** = significant at .01, ** = significant at .05, * = significant at .10

Youth Unemployment_{it}: The unemployment rate of those aged 15 – 24 in country i for year t.

OECD Benefits_{it}: Defined as the average of the gross unemployment benefit replacement rates in country i for year t.

Union Density_{it}: Measures the degree of union membership as the proportion of union members that collect a wage or salary in country for year t.

Interest Rate_{it}: The interest rate of government long-term bond yields, per cent per annum, which is a period average for country i during year t.

Total Manufacturing_{it}: Total production of manufacturing measured in thousands of tones for country i in year t.

Total Industry_{it}: Total production of industry measured in thousands of tones for country i in year t.

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