

# Germany's Educational Tracking System and How It Affects Entrepreneurship

By  
Mike Misek

NEURUS PAPER  
University of Illinois at Urbana-Champaign  
Visiting Humboldt University Berlin  
May 2007

## **Table of Contents**

Introduction.....	3
Entrepreneurship in Germany.....	5
Promotion of Entrepreneurship.....	7
Education System.....	8
Socio-Economic Panel Study.....	13
Analyzing a Jack-of-all-Trades View of entrepreneurs in Germany.....	16
Age and Region.....	19
Industry.....	22
Conclusions.....	23
Works Cited.....	26

## **Introduction**

As the United States and other First-World countries move forward in post-industrial economy, the role of entrepreneurs will play a greater role than ever before. Capital in the form of raw materials and manufactured products are making way for human capital. This change has altered the ease with which economies understand the inputs. Oil, coal, corn, and gold are tangible products that can easily valued in a market system. Human capital, on the other hand, is much more difficult. The right inputs of training and education into humans is not an exact science. While in the past decade, politicians and international organizations have trumpeted the importance of economic development through entrepreneurship, few can explain what is an entrepreneur, and what traits enable the said entrepreneur to be different from the rest of the population.

Edward Lazear proposes that entrepreneurs are a jack-of-all-trades that may not excel in any one skill, but are competent in many. The primary implication is that individuals with balanced skills are more likely than others to become entrepreneurs. His model provides implications for the proportion of entrepreneurs by occupation, by income and yields a number of predictions for the distribution of income by entrepreneurial status. Using a data set of Stanford Business School alumni, the predictions are tested and found to hold. In particular, by far the most important determinant of entrepreneurship is having background in a large number of different roles. Further, income distribution predictions, e.g., that there are a disproportionate number of entrepreneurs in the upper tail of the distribution, are borne out. (Lazear, 2003)

This research project looks at the educational tracking system in Germany as well as Lazear's theory on entrepreneurs to see if a connection exists in Germany similar to that found among graduates of Stanford Business School. If his theory would be held true, then one can expect individuals who are tracked to receive a more broad-based education as well as those who have held multiple career positions would be more likely to be entrepreneurs. On a whole, however, a jack-of-all-trades theory would argue that tracking would have a negative impact on entrepreneurship due to the fact many students would not have the ability to take a variety of different course.

Another interesting factor in the study would be how cultural differences between the United States and Germany could cause differences in whether a jack-of-all-trades would be more likely to be an entrepreneur. The United States has a stronger cultural connection to the free market system. In East Germany, the vast majority of the working population was educated and trained in the socialist German Democratic Republic, and even those in West Germany, where it has always been market-based in modern times, have a greater socialistic influence. It was not so long ago that Germans joked that the university was an institution that enabled enterprises to keep their sons and daughters away from the businesses belonging to their parents for a few years. (Tchouvakhina, 2004) While most Americans know that the vast majority of start-up businesses fail, start-ups continue to open up at rates not seen in other wealthy countries. A recent Global Entrepreneurship Monitor (GEM) study found that most countries with higher early-stage entrepreneurial activity also tend to have higher prevalence rates of established business ownership. The United States is the great exception to this rule having an established business rate, which is comparable to those of many European countries and Japan, but

also early-stage entrepreneurial activity at a rate around 10 percent, which is more than double that of Germany. (Bosma and Hardy, 2007)

In this project, I have used academic and scholarly literature to review the current state of entrepreneurship throughout the country as well as it compares internationally, the formalized tracking educational system in Germany, and then used data acquired from the German Institute for Economic Research (DIW) their Socio-Economic Panel Study (SOEP) data set to analyze whether a relationship exists where the tracking system in Germany affects entrepreneurial activity and see whether Lazear's theory holds for Germany.

### **Entrepreneurship in Germany**

The Global Entrepreneurship Monitor (GEM) is a major research project aimed at describing and analyzing entrepreneurial activity on a cross-national level. The project includes 42 countries, including the United States and Germany, and releases an annual report for its member nations. The Global Entrepreneurship Monitor (GEM) cross-national assessment of entrepreneurial activity is now in its eighth cycle. Started in 1999, with ten participating countries, the project has expanded to include 42 countries in 2006. GEM is a major research project aimed at describing and analysing entrepreneurial processes within a wide range of countries. In particular, GEM focuses on three main objectives: measure differences in the level of entrepreneurial activity among countries, and identify policies that may enhance the level of entrepreneurial activity. GEM's contribution to the knowledge and understanding of the entrepreneurial process is unique since, to date, no other data set exists that can provide consistent cross-country information and measurements of entrepreneurial activity in a global context.

The GEM's most recent report has Germany's "early-stage entrepreneurial activity", or business start-up rate, at 4.2 percent in 2006 down from 5.4 in 2005. Nascent entrepreneurs, who are individuals between the ages of 18 and 64 years who have taken some action towards creating a new business in the past year, is at 2.9 percent, up from 3.1 percent. The rate of new business owners is at 1.7 percent down from 2.7 percent. (Sternberg et al, 2007) Necessity entrepreneurship, individuals who start a business because they lack the capital to be employable, in Germany is relatively high for a "high-income" country accounting for between 30 and 40 percent of all early-stage entrepreneurial activity. It is believed that Germany has a high necessity entrepreneurial rate because of recent labor reforms that encourage business start-ups over unemployment services. Additionally, the GEM has stated that Germany has done a poor job of conveying knowledge and skills regarding the establishment of new enterprises. The GEM-Index, which measures the teaching of economics and business topics in school, is particularly unfavorable. (Hanushek and Woessmann, 2005)

In most western industrialized countries, Germany included, the share of men in total self-employment is much higher than the share of women percent of all females. According to official statistics for working women in Germany, women's self-employment rate is only about half of the men's rate. This was shown to be 5.0 percent and 10.3 percent for 1991, and 6.3 percent and 12.9 percent for 2002. According to a representative survey among the population for those aged 18–64 in 10 German regions in 2001, the share of men who were actively involved in starting their own new business was 4.9 percent compared to 2.3 percent of all females. The GEM reported similar results of 4.7 percent and 2.3 percent respectively in 2002 and 4.7 percent and 2.0 percent in

2004. A survey of the Rhine-Westfalia Institute for Economic Research (RWI) showed that in 1999 in Germany 15.9 percent of all men, but only 7.4 percent of all women, wish to become self-employed. (Wagner, 2006)

While no economist or academic would argue that there is anything inherent about women not being entrepreneurs, Joaquin Wagner found that there is empirical evidence that shows women in Germany are more risk adverse than German men. Fifty-six percent of women consider fear of failure to be a reason not to become self-employed as opposed to 44 percent for men. His findings were consistent with Eckel and Grossman who stated that women exhibited greater risk aversion in their behavioral choice and lower valuation for risky ventures and Carter who found that female entrepreneurs to be less likely to use debt financing to start and grow their business. (Wagner, 2006)

### **Promotion**

Germany may be noted for its government programs targeted specifically at women entrepreneurs. In May 1999, the Deutsche Ausgleichsbank, the funding bank of the Federal Government, established a loan for female entrepreneurs. The loan provides a maximum of DM 98,000 (what would now be 50,000 euros) for a maximum of 10 years and can be suspended during the first two years. As 80 percent of the risk can be borne by the European Investment Fund and the Deutsche Ausgleichsbank, it is a program that typically has great success in promoting business start-ups in the industrial, service and freelance sectors. The Federal Ministry for Family Affairs, Senior Citizens, Women, and Youth also created Female Entrepreneurs Network pilot project, which is aimed to establish a competence center for women entrepreneurs, as well as an European Union network for the promotion of women setting-up in business.

Programs targeted towards the population as a whole include the Kreditanstalt für Wiederaufbau (KfW), a state-owned investment bank, offers subsidized financing for all kinds of entrepreneurs whether opportunistic or necessity-based. The Bundesagentur für Arbeit, a federal employment agency, hands out subsidies exclusively to individuals who had been unemployed. (Block, 2006) This kind of promotion, where starting a business is preferable to unemployment, is why Germany has higher levels of necessity entrepreneurship than many developed European nations.

German universities have not long been known to promote entrepreneurship. While less vocational in nature than other educational tracts, German universities have been regarded poorly on the international level in promoting entrepreneurs. It is estimated that only 5 percent of graduates of German universities are prepared to be successful entrepreneurs without any further qualification or support. (Schulte, 2004) As members of a panel to promote entrepreneurship in Germany put it, “Entrepreneurship is the liberal arts of a business education. In contrast to a vocational education, which trains students for specific professions and crafts, a liberal arts education educates individuals to be free to do whatever they find to be interesting.” (Ripsas, 2002)

To counteract this problem, the German government, universities, and private companies have taken proactive measures to improve the education on issues of entrepreneurship. In 1998, the KfW along with the Ministry of Economics and Labor financed a professorial chair for new company formation at the European Business School in Oestrich-Winkel, a town in the state of Hesse in West Germany. (Tchouvakhina, 2004) Since then, about fifty professorships in entrepreneurship have



been created in German universities. Greater research opportunities have been created to study the growth processes of young companies. (Schulte, 2004)

## **Education System**

The educational system in Germany differs from that seen in the United States in that many of the country's schools implement a formalized tracking system as opposed to comprehensive schooling. Germany, like other European countries Austria, Germany, Hungary, and the Slovak Republic, have a tiered system of educational tracking that separates children by ability levels starting at an early age, age 10 in some countries. A great debate still goes on for and against tracking and the perceived tradeoff between equity and efficiency. Discussions of tracking are mainly concerned with placements between different types of schools and others with placements into different tracks within schools. The central argument behind tracking is that a classroom where all the students are at the same, or at least similar academic level, permit a focused curriculum and appropriately paced instruction that leads to the maximum learning by all students. This means teachers do not have to worry about boring the fastest learners or losing the slowest learners. The arguments for ungrouped classrooms largely revolve around concerns that the lower groups will be systematically disadvantaged by slower learning environments that leave them far behind the skills of those in the upper groups. Class, race, ethnicity, and socio-economic background of the students also are sometimes brought into the debate with opponents claiming that grouping will also lead to continuing bias against more disadvantaged students. (Hanushek and Woessmann, 2005)

Children enter the *Grundschule* at age six, and students of all levels of ability remain together as a group through the fourth grade (sixth grade in two states). Following

*Grundschule*, when most students are around ten years old, the German educational system tracks students of differing abilities and interests into different school forms. *Grundschule* teachers recommend their students to a particular school based on criteria such as academic achievement, potential, and personality characteristics, such as ability to work independently and self-confidence. However, in most states parents have the final say as to which school their child will track following the fourth grade, and some parents go against the teacher's recommendation because they believe the higher level tracks offer their children more opportunities. The lowest-achieving students attend the *Hauptschule*, where they receive a slower paced and more basic instruction in the same primary academic subjects taught at the higher tracked schools. Additional subjects at the *Hauptschule* have a vocational orientation. In most states, students enroll beginning in the fifth grade and continue their education through the ninth grade. Although attendance varies by states, enrollment figures reported 25 percent of the 14-year-olds attended the *Hauptschulen* in the 1992-93 school year. (Riley, 1999)

The *Realschule* provides students with an education that combines liberal, university-pathed education and practical education from the 5<sup>th</sup> through the 10<sup>th</sup> grade. The educational focus is differentiated between the *Unterstufe* (lower level), which incorporates the 5<sup>th</sup>, 6<sup>th</sup>, and 7<sup>th</sup> grades, and the *Oberstufe* (upper level), which includes the 8<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup> grades. The lower level has a strong pedagogical emphasis, while the upper level is more closely oriented to various disciplines. Enrollment figures in 1992-93 listed that 24 percent of the 14-year-olds attended the *Realschule*, and an additional 7 percent enrolled in a combined *Haupt/Realschule*. (Riley, 1999)

The highest track is known as the *Gymnasium* and it provides students with a liberal education and traditionally leads to study at the university. Enrollment begins in the 5<sup>th</sup> grade and can be transferred into after the completion of the *Realschule* (11<sup>th</sup> grade). Within the *Gymnasium*, the three most common educational tracks offered are classical language, modern language, and mathematics-natural science. A variation of the traditional *Gymnasium* is the *Berufliches gymnasium*, which offers specialized orientations in areas such as economics or the technological sciences in addition to core academic courses. Enrollment figures in 1992-93 listed that 30 percent of the 14-year-olds attended *Gymnasien*. (Riley, 1999)

According to the Organization for Economic Co-operation and Development (OECD), which is “an international organization helping governments tackle the economic, social and governance challenges of a globalized economy,” Germany spends \$4,624 per pupil receiving primary education in public schools for all services rendered, lower than the OECD average of \$5,450. The country, however spends slightly more than the OECD average for pupils in secondary school \$7,173 where the international average is \$6,962, and \$11,594 for tertiary education where internationally \$11,254.

For the returns on those dollars spent, the Program for International Student Assessment (PISA), a wing of the OECD, found that German students scored close to the international average, but poorly when measured against several Asian and European countries. Most recently, Germany recorded a mean score of 491.4 in literacy, which is below the international mean of 494.2. The country scored 503.0 and 502.3 in mathematics and natural sciences, which was greater than international means of 500.0

and 499.6. These scores ranked Germany 17th out of 30 countries in literacy, 15th out of 30 in mathematics, and 13th out of 30 in natural sciences. (PISA, 2006)

The distribution of income for Germans based on their educational attainment is more centered around the median than it is for the United States. Table 1 shows that while individuals that are lowest achieving in school are more likely to earn less than the median as well as less than half the median than those with tertiary education, the gap is not as severe as in the United States. In the United States, 44.3 percent of individuals with less than upper secondary educational attainment, or high school dropouts, earn less than half the national median whereas only 25.2 percent of Germans do. On the other end of the educational spectrum, 30.4 percent of Americans with advanced tertiary education in the United States, versus 23.2 in Germany, make more than twice the nation's median income level.

Table 1

**German and US Income by educational attainment in 2004**

	<b>Educational Attainment</b>	<b>Less than Half the Median</b>	<b>Between Half the Median and the Median</b>	<b>Between the Median and 1.5 times the Median</b>	<b>Between 1.5 times the Median and 2.0 times the Median</b>	<b>More than 2.0 the Median</b>
<b>Germany</b>	Below upper secondary	25.2	38.6	29.5	5.3	1.4
	Upper secondary and post-secondary non-tertiary	23.0	33.9	30.0	7.9	5.3
	Tertiary-type B education	12.7	27.8	28.7	19.3	11.5
	Tertiary-type A and advanced research programmes	13.4	18.3	24.1	20.9	23.2
	All levels of education	19.7	30.0	28.2	12.0	10.2
<b>USA</b>	Below upper secondary	44.3	39.0	10.8	4.0	1.8
	Upper secondary and post-secondary non-tertiary	24.1	35.9	21.9	9.9	8.3
	Tertiary-type B education	17.0	32.1	24.2	15.0	11.7

	Tertiary-type A and advanced research programmes	12.0	18.8	22.0	16.9	30.4
	All levels of education	21.1	29.6	21.0	12.2	16.1

According to the Organization for Economic Co-operation and Development, 2007.

Furthermore the OECD release states that German males receive slightly more formalized education than German females. German males 45-54 years old have on average one-half year more formalized education than their female counterparts. Among 25-34 year olds, males receive more than formalized education, but less than a quarter of a years worth. This goes against an international trend. Of the 31 countries tested, only ten found males aged 25-34 to have more formalized education than females. (OECD, 2006)

### **Socio-Economic Panel Study**

The data used for this project is from the German Institute for Economic Research's (DIW) Socio-Economic Panel Study (SOEP) data set. SOEP considers itself to be an actor for observing social phenomena. SOEP data are used not only for basic academic research, but also for policy-related social reports directed towards a broader audience. SOEP data make it possible to test a wide range of economic and social theories as well as psychological theories. SOEP has collected yearly representative microdata on persons, households and families in the Federal Republic of Germany since 1984, and in East Germany since 1990, to measure stability and change in living conditions. SOEP follows principally a micro-economic approach enriched with sociological and political science variables that include objective indicators such as income and employment status as well as subjective indicators to measure the individual perception of objective living conditions that include satisfaction, values, and

preferences. Standard components are measured bi-yearly covering the following information: demography and population, labor market and occupation, income, taxes, and social security, housing, health, household production, education, training, and qualification.

SOEP has a high degree of stability over time. In 1984, 5,921 households containing a total of 12,290 individual respondents participated in “SOEP West”, and after 22 waves of testing 3,635 of these households with 6,575 respondents were still participating in 2005. In the “SOEP East” sample, 2,179 households with 4,453 members were surveyed in 1990. 1,771 households and 4,453 individuals were still participating in 2005. Similar successes were found when immigrants, Immigrant Sample D, were added in 1994, the pool of participants was extended in 1998, Supplementary Sample E, and again in 2000 with Innovation Sample F.

Of the sampled Germans in the SOEP, only those who completed a university program, specialized vocational schooling, fachhochschule (a university of applied sciences), higher level technical schooling, other education, civil service training, and apprenticeships were used in this study. In some instances, individuals completed both education and either civil service education or apprenticeship, but not multiple categories of formal education. SOEP categorizes self-employment into four categories: independent farmer, freelance, other self-employment, and family business. Since the focus of this study is on entrepreneurship, the category of interest is “other self-employment.” While some independent farmers, freelance workers, and family businesses can be categorized as entrepreneurs, many are working in established businesses they will not be in this study.

The data did not fit perfectly into the project. For self-employment data, the data used was under the title “lastjob.” While this could and in many cases does refer to an individual’s current job, unemployed and retired are also included. For example, of the five individuals who completed university in Germany and are categorized as having their last job in “other self-employed,” three were either retired or unemployed at the time of their survey. This affected the industry and income data because the retired and unemployed are not part of an industry and their income is not reflecting their business. Also, income data was not completed by all participants and not consistent among those that did. Some record their self-employment income as their “primary wages and income”, which I have no reason to believe it was not, and others recorded it as “income from self-employment.” As a result of this, the income categories are treated in the net for this study.

SOEP attempts to create a representative sample, the number of women in the data that completed university, fachhochschule, higher level technical schooling, specialized vocational schooling, training/ apprenticeship, and other education is roughly the same as men. SOEP also constructed the sample so that women make up close to half of all self-employed. This aspect of the SOEP prevents this project to look into some aspects of gender differences in education and entrepreneurship.

### **Analyzing a Jack-of-all-Trades View of entrepreneurs in Germany**

On entrance into self-employment of any kind, the sampled population has a lower rate of self-employment, between 1 and 2 percent, than the GEM records as Germany’s national rate (4.2 percent). Table 2 shows entrance into self-employment of any kind. Those completing training/apprenticeship in Germany and civil service training

have a statistically significant correlation at the .05 level whereas completing higher level technical schooling in Germany has a correlation significant at the .01 level. No one who completed Civil Service training went on to any form of self-employment. While not an alarming finding seeing as those who enter work for the city or state have a stable employer are not receiving a continuing education in free market principles, it does illustrate a lack of career change among the sampled Germans.

Table 2

**Self-Employment Breakdown in Germany by Educational Track**

	<b>Not Self-Employed</b>	<b>No Answer</b>	<b>Independent Farmer</b>	<b>Freelance</b>	<b>Other Self-Employed</b>	<b>Within Family Business</b>	<b>Total</b>	<b>t-statistic</b>
<b>Completed University in Germany</b>	1567	13	0	17	5	1	1603	-0.016
<b>Completed Specialized Vocational Schooling in Germany</b>	1176	29	3	1	13	2	1224	-0.005
<b>Completed Fachhochschule in Germany</b>	854	9	0	7	4	2	876	-0.007
<b>Completed Higher Level, Technical School in Germany</b>	729	12	2	1	24	0	768	0.034**
<b>Completed Other Education in Germany</b>	449	5	2	2	5	1	464	0.003
<b>Completed Civil Service Training in Germany</b>	367	6	0	0	0	0	373	-0.022*
<b>Completed Training/Apprenticeship in Germany</b>	9065	329	16	25	105	11	9361	0.02*

\*\*=Correlation is significant at the .01 level (2-tailed)

\*=Correlation is significant at the .05 level (2-tailed)

When only accounting for entrance into the self-employed category of interest, other self-employed, the statistical significance is different. Table 3 shows that completing a university degree (-.029) and apprenticeship in Germany (-.034) have statistically significant correlations at the .01 level. Of the sampled, less than 1 percent of those completing university and fachhochschule were self-employed in entrepreneurial



businesses. 3.2 percent of the sampled that completed higher level, technical schooling were self-employed.

Table 3

**Statistical Correlation between Education and entrance to entrepreneurial businesses**

	Total	Percentage of sampled population	t-statistic
<b>Completed University in Germany</b>	5	0.3	-0.029**
<b>Completed Specialized Vocational Schooling in Germany</b>	13	1.1	0.014
<b>Completed Fachhochschule in Germany</b>	4	0.5	-0.016
<b>Completed Higher Level, Technical School in Germany</b>	24	3.2	-0.004
<b>Completed Other Education in Germany</b>	5	1.1	-0.008
<b>Completed Civil Service Training in Germany</b>	0	0	-0.003
<b>Completed Training/ Apprenticeship in Germany</b>	105	1.2	-0.034**

\*\*=Correlation is significant at the .01 level (2-tailed)

Not all of the sampled population supplied their income data, only 79 provided the information. They cumulatively netted 1,803,282.54 euros and averaged about 22,800 euros. Of the 7,048 non-entrepreneurs that provided information, their income averaged 23,343 euros. Table 4 shows that this holds true when accounting for education and training. Average income is lower for all school tracks for those self-employed than for the population as a whole, and very similar for those who completed training or an apprenticeship. Median income is only higher for those who completed higher level technical schooling in Germany.

Table 4

**Net Income by Education and Training in Germany**

<b>Self-Employed in Entrepreneurial Businesses</b>	<b>Total</b>	<b>Cumulative Income in euros</b>	<b>Average Income in euros</b>	<b>Median Income</b>	<b>Standard Deviation</b>
<b>Completed University in Germany</b>	3	60120	20040	19677	19662
<b>Completed Specialized Vocational Schooling in Germany</b>	8	178494	19833	26383	11423
<b>Completed Fachhochschule in Germany</b>	2	17936	8968	N/A	10659
<b>Completed Higher Level, Technical School in Germany</b>	13	304137	23395	26383	13983
<b>Completed Other Education in Germany</b>	2	23928	11964	N/A	11714
<b>Completed Training/Apprenticeship in Germany</b>	51	1218667	23895	20861	18367

<b>Sampled German Population</b>	<b>Total</b>	<b>Cumulative Income in euros</b>	<b>Average Income in euros</b>	<b>Median Income</b>	<b>Standard Deviation</b>
<b>Completed University in Germany</b>	806	19222625	23849	21474	19363
<b>Completed Specialized Vocational Schooling in Germany</b>	602	13991493	23242	22456	17588
<b>Completed Fachhochschule in Germany</b>	436	9550068	21904	21474	15525
<b>Completed Higher Level, Technical School in Germany</b>	372	9043025	24309	22089	19606
<b>Completed Other Education in Germany</b>	253	5913154	23372	21474	16598
<b>Completed Training/Apprenticeship in Germany</b>	4579	106803977	23325	21487	18425

When applying Lazear's theory, this finding is troubling. If the incentive for an individual to become an entrepreneur is that their personal income curve is higher in self-employment than as an employee, then there is little incentive to take on the added risk when the rewards do not appear to bear fruit. The added fear of business failure that is more prevalent in Germany than the United States, with the red tape involved in running

a business, leads one would believe that an individual would want greater probable returns for their venture thus accounting for lower entrepreneurial rates in Germany.

Similarly, Lazear's theory regarding occupational change does not hold for Germany. It appears that there is no greater likelihood of an individual becoming an entrepreneur having had a greater number of jobs. Of the 6934 individuals sampled that were not self-employed in entrepreneurial businesses, 47 percent had changed their occupation once or more whereas of the 107 individuals that were self-employed 52 percent changed their occupation once or more. Table 5 shows that individuals who had never changed jobs before starting a business not only made up the greatest percentage, but also had the greatest average and median incomes for the self-employed.

Table 5

**Number of Occupational Changes in Entrepreneurial Businesses**

<b>Sampled German Population</b>	<b>Total</b>	<b>Cumulative Income in euros</b>	<b>Average Income in euros</b>	<b>Median Income</b>	<b>Standard Deviation</b>
<b>Never Changed Jobs</b>	3263	75454512.93	23124.28	19524.45	23495.81
<b>Once</b>	2266	58404183.77	25774.13	22893.55	24100.89
<b>More than Once</b>	1405	35321559.71	25139.9	20900.96	22584.56
<b>Self-Employed in Entrepreneurial Businesses</b>	<b>Total</b>	<b>Cumulative Income in euros</b>	<b>Average Income in euros</b>	<b>Median Income</b>	<b>Standard Deviation</b>
<b>Never Changed Jobs</b>	52	1705606.97	32800.13	23997.62	31247
<b>Once</b>	31	679149.04	21908.03	18645.09	18922.87
<b>More than Once</b>	24	849743.61	35405.98375	20091.76	47725.38

## Age and Region

The most significant divides in self-employment in Germany are by age and along East-West lines. The reason for the disparities is likely the same for the both. While it can be expected that entrepreneurs would be slightly older than the rest of the population given the need to accumulate wealth and knowledge in order to start the venture, Chart 1 suggests that a greater cultural change took place. Most of this can probably be attributed

to individuals raised in the socialist German Democratic Republic. They were not exposed to the market principles in their formal education and training that would prepare them for entrepreneurship, and that for the majority of their lives the idea of starting a business was not realistic.

The majority of the self-employed were born between 1920 and 1940 whereas the rest of the population has the majority of the births between 1940 and 1980. For entrepreneurs, individuals born before 1930 make up 35 percent of the population as opposed to 7 percent for the rest of the country. Half of entrepreneurs were born between 1930 and 1949 as opposed to 27 percent of the total population, and those born since 1950 make up only 15 percent of all entrepreneurs despite making up 65 percent of the population. The relationship between year of an individual's birth and entrance into self-employment in entrepreneurial businesses is statistically significant at the .01 level.

Chart 1

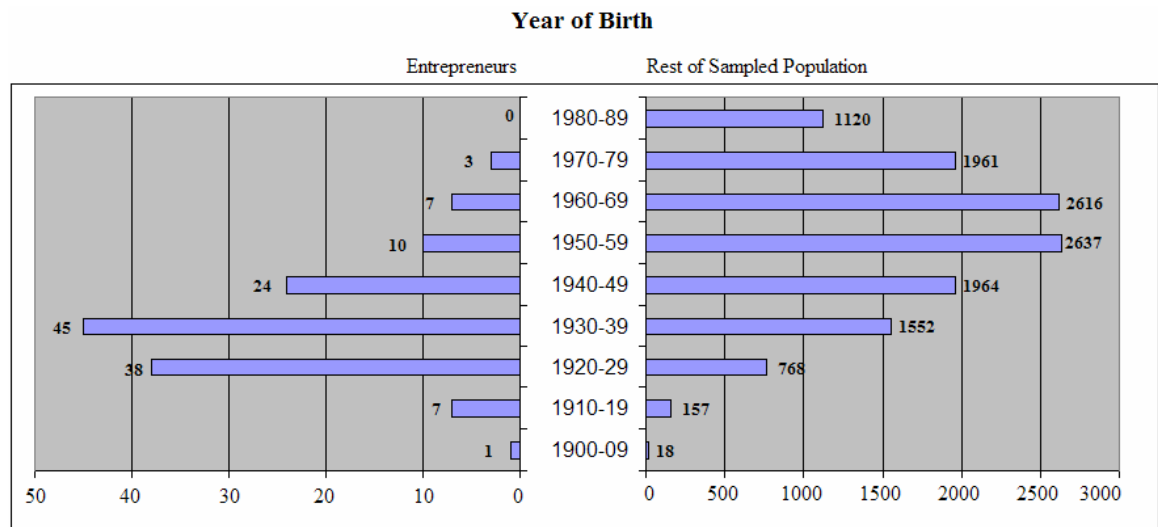


Table 6 shows that only one individual who finished fachhochschule and four who finished training and an apprenticeship in East Germany went on to self-employment. On

the other hand, 151 individuals surveyed in West Germany are self-employed in entrepreneurial businesses.

Table 6

**Regional/Educational Breakdown of Entrepreneurial Businesses in Germany**

	West Germany	East Germany
Completed University in Germany	5	0
Completed Specialized Vocational Schooling in Germany	13	0
Completed Fachhochschule in Germany	3	1
Completed Higher Level, Technical School in Germany	24	0
Completed Other Education in Germany	5	0
Completed Civil Service Training in Germany	0	0
Completed Training/ Apprenticeship in Germany	101	4

More than anything else, these findings suggest that it is not the style in which a population is educated and trained as much as the greater cultural ideals instilled into a population during their formative years. If true, then one would expect as a united Germany continues to grow in a more market-based economy the entrepreneurial divide between the East and West will fade. Certainly with Germany's conscious effort to increase entrepreneurial education and activity in the country will cause the generational divide to become less pronounced as well.

## Industry

When looking at entrepreneurship, it is important to look not only at the individuals and money, but also what kind of business and where it is situated especially when looking at population more diverse than MBAs from Stanford University. Not all businesses are equal in their economic and social value to the community and nation.

The establishment of a pawn shop or liquor store does not provide the same benefits to a region as the creation of an engineering or construction firm.

Chart 2

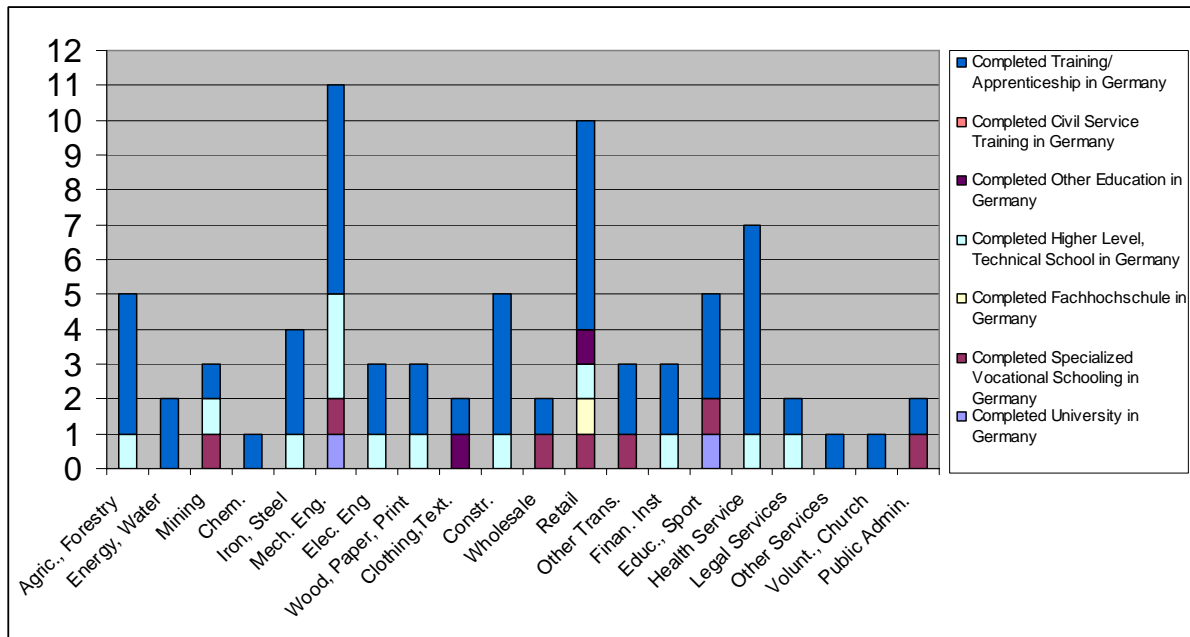


Chart 2 shows the different industry classes of the businesses started. Among the applicable responses, mechanical engineering had the most businesses with eleven with proprietors having four different educational and training backgrounds. Retail businesses had ten, and health services had seven. Agriculture and Forestry, Construction, and Education and Sport all had five businesses in those industries. Businesses in eleven different industries were formed by individuals that completed higher level technical

schooling as well as seven different industries were formed by those who completed specialized vocational schooling in Germany.

## **Conclusions**

Pinning down what makes an entrepreneur and how to educate them is not an easy task. This has to do in large part to the definition of entrepreneur being so vague and the spectrum for what could be included is so broad. An individual who starts a Doner kebab stand in Berlin could be placed in the same category as Theo Albrecht and Bill Gates. Certainly, when policymakers and academics talk about the need to promote entrepreneurship they are not talking about sandwich shops.

Entrepreneurs are a byproduct of not only a capitalistic economic system, but also a capitalistic culture, which is shown by the vast regional and age divide in entrepreneurs. The marriage between the United States and the capitalist culture is stronger than anywhere else in the world, which is evidenced by a level of entrepreneurial activity unrivaled by other wealthy, developed nations. In a post-Cold War environment where the East is learning and West is further embracing and developing their own free market principles, Germany, as evidenced by its 4.2 percent start-up rate in 2006, appears to still be learning to adapt to the current trend in global economic theory. It has only been in the past decade that German universities have had courses educating students on entrepreneurship. A national culture and understanding is not developed overnight, and like the rest of Europe and the developed world, it can be reasoned that as younger Germans are educated in a culture where free market principles are even more of the norm, the economic and entrepreneurial picture of the country will start to change in the not too distant future.

Where Germany has already made strides is in promoting not only opportunistic entrepreneurs, but also necessity entrepreneurs. Such programs have helped in a great number of formerly unemployed Germans to become self-employed. This has resulted in necessity entrepreneurs accounting for between 30 and 40 percent of all early-stage entrepreneurial activity. It can be debated whether it is fiscally sound on a macroeconomic level to invest in low-level entrepreneurial activity when the overall rate is below international averages, however the policy does assist low-skilled workers to find employment opportunities that could become more than just subsistent. Higher level entrepreneurial activity has greater risks involved and growth in those ventures would expectedly develop slower. The private, governmental, and academic promotion is not going to change the national business sense and culture overnight, so for the time being low level entrepreneurial promotion might actually be safer.

Lazear's jack-of-all-trades theory for entrepreneurs appears to have mixed results for the German population as a whole. This could have happened for a number of reasons. It is possible that testing a relatively homogenous population in Stanford MBAs is not representative to any nation's population as a whole, much less one whose country is still growing into the market system. To have a Stanford MBA, one has to be not only a high achiever academically and professionally, but also have the financial means to afford an expensive, elite private university.

Another possibility is that testing a jack-of-all-trades theory in a country that just recently moved to the capitalist model might not allow for the market to settle itself for specialists as opposed to those with multiple skills. The income curves for the various populations of Germans that completed different tracts and training shows that there is



not a noticeable financial benefit for people of any educational or training attainment to become self-employed. If people do not see the likelihood that a risky venture will reward them financially, they are not likely to embark.

One hundred of the 135 self-employed had completed formalized training and/or apprenticeship. While that makes up only 1 percent of all that completed training and/or apprenticeship, it does appear to be an important factor in an individual's willingness to start a business. With about half of the entire population stating that fear of failure is a reason for not starting a business, the statistic shows that not having exposure to a business environment will negatively affect one's willingness to become self-employed.

One cannot conclusively argue that the formalized tracking system in Germany is a benefit or deterrent to entrepreneurship. Less than 1 percent of "high" achieving students that complete university or fachhochschule, which allow for the possibility of a broader, more liberal arts education went on to become self-employed. The only track that was noticeably greater than the others is that those completing higher level technical schooling had 3 percent become self-employed. This, however, could change. Currently, it appears that culture has a greater impact than stylized education and training, but it is possible if not probable that this study would be more telling if done at a future date when the entire population of Germany has better experience to the market system that the country.

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