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**Article**

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# Self-Employment in Germany: The Trend Has Been Increasing for Some Time

by Michael Fritsch, Alexander Kritikos, and Alina Rusakova

Entrepreneurial self-employment in Germany has undergone a strong upturn in the last 20 years. The number of self-employed people rose by 40 percent between 1991 and 2009. The reasons for this development are the catch-up processes in eastern Germany, structural change towards the service sector, and a strong willingness among the highly skilled, the unmarried and among foreigners to enter self-employment. Furthermore, the percentage of women becoming involved in start-ups increased substantially during the monitoring period. The decision to take up self-employment generally pays off: after three years, 38 percent of all entrepreneurs still being active in the market had a higher income, while only 17 percent had a lower income than in their former paid employment position.

In the mid-80s, scientists and politicians began to call for a “new entrepreneurial spirit” and a “culture of self-employment” in Germany. They did this for good reason, since start-ups and entrepreneurial activities can play an important role in introducing innovation for economic growth and job creation. In the absence of flourishing start-up activity, economies are threatened to stagnate.

One generation later, it is time to review to what extent such a culture has been developed. For this purpose, we have outlined entrepreneurial activities in Germany from 1991 to 2009, the most recent year for which data are available. We focus on issues such as how the number of self-employed people has developed during this period, what demographic and socio-economic background and what kind of working experience they have, what income they are generating, and in which sectors they are starting their businesses.

Our empirical analyses are based on the Micro-census implemented annually by the Federal Statistical Office.<sup>1</sup> The Micro-census is the most comprehensive empirical study in Germany with 820,000 people being interviewed annually (see box). Due to its representativeness, the relatively large number of observations, and the diversity of the information it contains, the Micro-census is, in many ways, well suited for an analysis of start-up activity, but it has rarely been evaluated for such issues.<sup>2</sup>

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<sup>1</sup> For a more detailed analysis, see M. Fritsch, A. Kritikos, and A. Rusakova, „Who starts a business and who is self-employed in Germany,” no. 1184, DIW Berlin (2012).

<sup>2</sup> Michael Burkhard Piorkowsky prepares annual reports about start-up activities based on the Micro-census, see also M.-B. Piorkowsky, M. Buddensiek, and S. Fleißig, *Selbständige in Deutschland 2005-2009 – Eine Strukturanalyse von Mikrozensusergebnissen*. Bonn: 2012.

Box

### The Main Data Sources for Analyzing Start-up Activity and Entrepreneurial Self-Employment in Germany

In Germany, there are a variety of reporting systems that regularly generate information about start-ups, but far fewer studies deal with entrepreneurial autonomy. The reporting systems use different survey methods and survey sources, have a different survey scope, and capture data over different survey periods.

The Micro-census of official statistics is an annual representative survey of some 820,000 people living in 370,000 households in Germany.<sup>1</sup> As well as employment status, it also records a variety of demographic and socio-economic characteristics, but also industry-specific, employment-specific, and regional information. The Micro-census provides comprehensive data on business starters and the entrepreneurial self-employed in primary, secondary, and additional employment. However, very little information is available about the companies concerned. The information can reliably be extrapolated to the total population. The Micro-census is available as a four-year panel in two periods (1996-1999 and 2001-2004). One disadvantage of the Micro-census is that it does not record short-term business starters in between two study periods.

The basis of business registration statistics are compulsory business applications made at business registra-

tion offices, which can be used for information about start-ups. The information contained in the statistics about the business starter and the relevant business is very limited. Evaluations of the status of self-employed are not available. Since many businesses are registered but do not always trade, the number of start-ups in the business registration statistics is overestimated; there is also a lack of information about businesses that are not required to register, such as freelance professions. Empirical analyses have shown that the number of start-ups in these statistics is greatly exaggerated.<sup>2</sup> In diluted form, this also applies to start-up statistics from the Institute for SME Research<sup>3</sup> (Bonn), which is essentially based on business registration statistics.

Statistics from the Federal Employment Agency about employed persons liable for social insurance contributions can be used as a business record for analyzing start-up activity.<sup>4</sup> It contains detailed information about the development of employment at businesses in terms of local production units. However, it lacks information about the person starting the business. Since

<sup>1</sup> „Bevölkerung und Erwerbstätigkeit: Stand und Entwicklung der Erwerbstätigkeit in Deutschland," Federal Statistical Office (Wiesbaden: 1991-2009).

<sup>2</sup> M. Fritsch, R. Grotz, U. Brixy, M. Niese, and A. Otto, „Die statistische Erfassung von Gründungen in Deutschland," *Allgemeines Statistisches Archiv* (2002), 86, 87-96.

<sup>3</sup> B. Günterberg, „Berechnungsmethode der Gründungs- und Liquidationsstatistik des IfM Bonn" (2009)

<sup>4</sup> M. Fritsch and U. Brixy, „The Establishment File of the German Social Insurance Statistics," *Schmoller's Jahrbuch* (2004): 124, 183-190.

## Development of Self-Employment and Entrepreneurial Behavior

According to the Micro-census, every year in Germany, about one percent of the working population takes the decision to become self-employed full-time (Figure 1). However, this number has varied significantly in the past few years; it rose from 262,000 full-time start-ups in 2001 to 396,000 in 2005.<sup>3</sup> In 2009, there were 294,000 start-ups according to the Micro-cen-

sus. It is worth noting that since 1997 the percentage of new start-ups among the working population in eastern Germany has been consistently higher than in the western part.

As a result of these start-ups and the relatively high survival rates<sup>4</sup> of new businesses, the number of self-employed people rose between 1991 and 2009 by 40 per-

<sup>3</sup> Compared internationally, the start-up rate in Germany is rather low— see the *Global Entrepreneurship Monitor 2010*, see U. Brixy et al., „Global Entrepreneurship Monitor," Country Report Germany 2010. Hanover and Nuremberg: 2011.

<sup>4</sup> The percentage of start-ups funded by the new business grant that survived at least five years was 70 percent. See M. Caliendo and A. Kritikos, „Die reformierte Gründungsförderung für Arbeitslose – Chancen und Risiken," *Perspektiven der Wirtschaftspolitik* 10 (2009): 189-213. Y. Schindele and A. Weyh found similar survival rates after five years, „The direct employment effects of new businesses in Germany revisited: an empirical investigation for 1976-2004," *Small Business Economics* 36 (2011): 353-363.

start-ups with no employees liable for social insurance contributions are not recorded, the number of start-ups in these statistics is greatly underestimated.

The Mannheim Enterprise Panel of the Centre for European Economic Research (ZEW) is based on preparations of data from the credit bureau Creditreform.<sup>5</sup> In particular, the information includes financial aspects, and usually also the number of employees in the company. Data recorded about very small companies are incomplete. Accordingly, the number of start-ups is underestimated. It contains hardly any demographic and socio-economic information about the business starter.

The Global Entrepreneurship Monitor (GEM) is based on a representative telephone survey of the population, which is conducted annually in more than 50 countries. In Germany, around 5,500 persons are currently surveyed annually.<sup>6</sup> The data basis allows, in particular, international comparisons of start-up tendencies among the population. In addition to employment status, various personal characteristics are also recorded. Information about the company in question is limited.

The KfW's Start-Up Monitor is also based on an annual telephone survey of initially 40,000 and currently about 50,000 persons.<sup>7</sup> The main objective of the mo-

onitor is to generate information about start-up activity in Germany. The monitor provides extensive demographic and socio-economic information about business starters. Previous projections based on the monitor, however, have made overestimations of start-up activities in some years. Moreover, start-up trends outlined by the KfW's monitor varied significantly from all other data sources.<sup>8</sup>

Information about the number of annual start-ups varies considerably according to the data source used—the largest variance came in 2003 as the start-up panel of the Centre for European Economic Research (ZEW) counted 243,000 economically active business starters and the start-up monitor of the Kreditanstalt für Wiederaufbau (reconstruction loan corporation, KfW) stated there were 1.65 million business starters, almost seven times the ZEW's figure.

The Micro-census was used for this study. As a representative survey, it is the most comprehensive and reliable data source on business starters and the self-employed in Germany. We have restricted ourselves to full-time start-ups when presenting start-up activity.<sup>9</sup>

<sup>5</sup> M. Almus, D. Engel, and S. Prantl, „The ZEW Foundation Panels and the Mannheim Enterprise Panel (MUP) of the Centre of European Research (ZEW)“, *Journal of Applied Social Science Studies* (2000): 120, 301-308.

<sup>6</sup> U. Brixy et al., „Global Entrepreneurship Monitor,“ Country Report of Germany 2008. Hanover and Nuremberg: 2009.

<sup>7</sup> „KfW start-up monitor 2011“, Kreditanstalt für Wiederaufbau (KfW). Frankfurt a.M.: 2011.

<sup>8</sup> Since the introduction of the KfW start-up monitor, for example, it recorded more startups as sideline businesses than there were registered as secondary-occupation entrepreneurs in the Micro-census.

<sup>9</sup> For more information about startups as a secondary or additional occupation, see M.-B. Piorkowsky et al., „Selbständige in Deutschland,“ (2010).

cent, up from just over 3 million to 4.2 million (Figure 2). Some of these increases were due to the doubling of the number of self-employed in eastern Germany (from 443,000 to 867,000 self-employed). In 2005, the percentage of self-employed people in the former East German federal states surpassed that of the former West Germany. However, during this period, a relatively high share of self-employed in eastern Germany are solo entrepreneurs with no additional employees.<sup>5</sup>

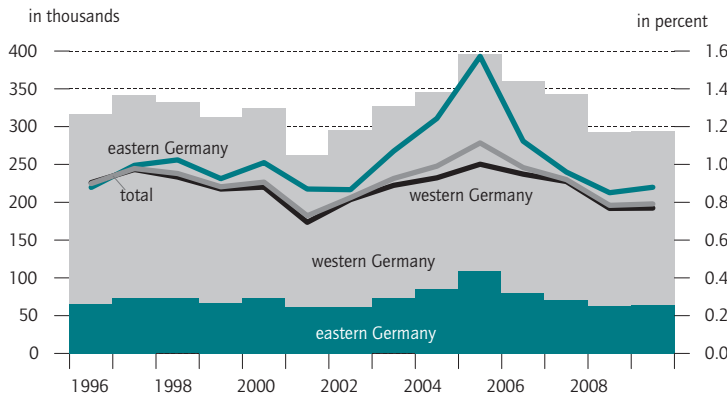
In 2009, a total of eleven percent of working people was in full-time self-employment; this was almost three percentage points higher than in 1991. In contrast, according to OECD statistics, self-employment stagnated or even decreased in many other established and innovation-driven market economies.<sup>6</sup> The significant increase in the number of self-employed in Germany suggests

<sup>5</sup> The percentage of sole entrepreneurs compared to total selfemployed in 1991 was 46 percent, by 2009 this percentage had increased to nearly 56 percent, see M. Fritsch, A. Kritikos and A. Rusakova, „Who starts a business“ (2012).

<sup>6</sup> According to the OECD, the percentage of selfemployed to all wage earners decreased from nine to seven percent in the United States, from 13 to nine percent in France, from 15 to 13 percent in the UK, from 15 to twelve percent in Australia, from eleven to eight percent in Norway, and from 22 to 13 percent in Japan. In Canada, the rate stagnated at nine percent. In the Netherlands, it rose from 11.6 to 13.2 percent and in Sweden from 9.2 to 10.4 percent. See OECD Factbook: Economic, Environmental and Social Statistics. Paris: 2010.

Figure 1

**Start-Up Activities in Eastern and Western Germany**



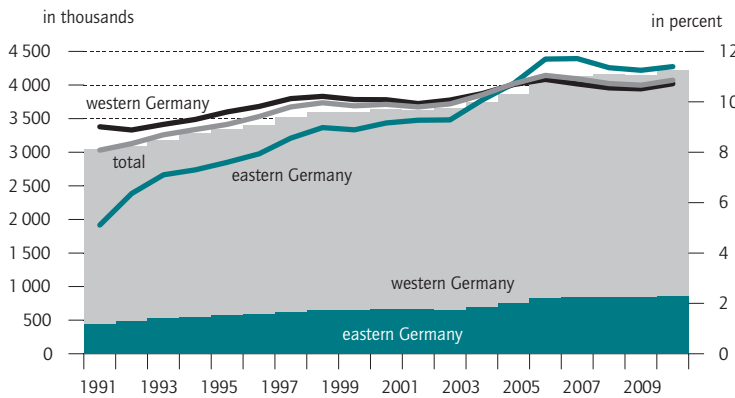
Columns = number of start-ups (left axis).  
 Lines = start-up rate (right axis).  
 Source: Micro-census of the Federal Statistical Office, calculations by the DIW Berlin.

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Each year in Germany about one percent of the working population takes the decision to become self-employed full-time, im Vollerwerb selbständig zu werden.

Figure 2

**Professional Self-Employment in Eastern and Western Germany<sup>1</sup>**



Bars = number of self-employed (left axis).  
 Lines = self-employed rate (right axis).  
 1 Data estimated for 1994 and 1995.  
 Sources: Micro-census of the Federal Statistical Office, calculations by the DIW Berlin.

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The number of self-employed in Germany between 1991 and 2009 increased by 40 percent.

that a culture of entrepreneurship was able to further establish itself during the study period. It is worth highlighting the increase in entrepreneurial self-employment in eastern Germany, where the number of self-employed already reached the western German level

only 15 years after the collapse of socialism, and it still remains higher.

In addition, we examine what factors other than the development in eastern Germany have influenced the rise of self-employment in Germany.<sup>7</sup> We consider the industry structure and the individual background of the self-employed.

**Industry Structure of Self-Employed**

The structural change of the German economy towards service industries has also been reflected in start-up activity. More than half of all businesses (60 percent) are started in the service industry. The proportion of start-ups in this industry in 1996 was 46 percent. In contrast, the percentage of start-ups in the trade and hospitality sector, when compared to the total number of start-ups, fell from over 30 percent in 1991 to just over 22 percent in 2009 (Figure 3).

As a result of this development, every second self-employed person in 2009 was in the service sector (from a baseline of 35 percent in 1991), if we add transport and communications, financial institutions, and insurance (Figure 4). The only other sector with a positive trend is the construction industry where the number of self-employed increased from eight to eleven percentage points from 1991 to 2009. At the same time, the number and percentage of self-employed in manufacturing fell.

It should be noted that the general trend towards the service sector of the German economy is thus also reflected in the industries chosen by the self-employed. Since many areas of the service sector are characterized by relatively low entry barriers and low minimum optimal firm sizes, this structural change (in addition to the development in eastern Germany) is significant in explaining the rise of self-employment in Germany.

**Entrepreneurs and the Self-Employed Are Getting Older**

Data from the Federal Employment Agency show that in the last 30 years, salaried employees have become on average five years older—from 36.4 years in 1980 to 41.4

<sup>7</sup> No policy instruments for startup grants are introduced in this report. See previous weekly reports, such as A. Kritikos, „Gründungszuschuss: Ein erfolgreiches Instrument steht zur Disposition,“ DIW Wochenbericht, no. 45 (2011), or M. Caliendo and V. Steiner, „Ich-AG und Überbrückungsgeld – Neue Ergebnisse bestätigen Erfolg,“ DIW Berlin Wochenbericht, no. 3 (2007).

years in 2010.<sup>8</sup> This aging process is even more evident among entrepreneurs and the self-employed.

About two thirds of all entrepreneurs were between 25 and 44 years old when they started their businesses (Table 1). However, the average age within this age group has increased in recent years: whilst in 1996, new businesses started by 25 to 34 year-olds made up the highest proportion of all start-ups, this figure has since fallen by more than ten percentage points, and the proportion of older entrepreneurs is increasing. Obviously, this development is affected by the general demographic change in Germany.

Persons aged between 25 to 34 still have the highest rate of start-ups, followed by the 35 to 44 age group. In this respect, the demographic factors affecting the decline in start-ups by people aged between 25 and 34 may have a negative impact on the number of self-employed in future. Moreover, the tendency of fewer young people to start businesses suggests that potential entrepreneurs tend to initially gain work experience in paid employment before they take the plunge into self-employment. The small proportion of businesses started by people aged over 54, however, suggests that there is a certain age limit beyond which the willingness to take the step into self-employment decreases.

Changes in the ages of those starting new businesses are already reflected in a shift in the age structure of the self-employed. While the proportion of self-employed in the two youngest age groups (under 25, and 25 to 34 years) dropped from 21 percent in 1991 to 14 percent in 2009, the proportion of self-employed rose in all age groups over 34. Here, the dominance of entrepreneurs aged between 35 and 54 has been consolidated—in 2009, they comprised around 60 percent of all self-employed. It is also worth noting that in 2009, over six percent of all the self-employed were aged 65 years or older (Table 2). The often-discussed demographic development is clearly noticeable among the self-employed.

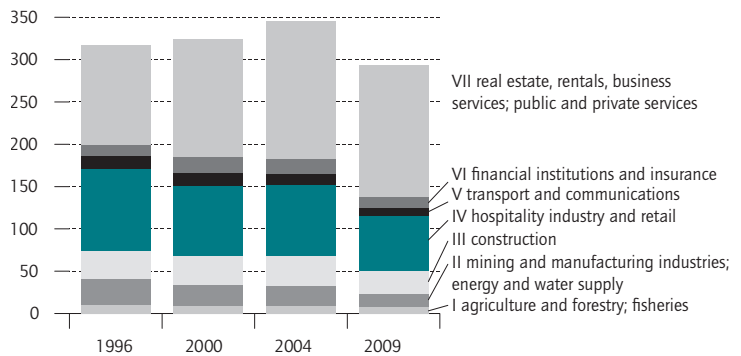
### More Women and Unmarried People Are Becoming Self-Employed

Start-up activity in the last decade was characterized by a strong increase in start-ups by women. Between 1996 and 2009, the proportion of start-ups by women compared to all start-ups increased from 33.3 percent to 41.6 percent in 2009. Whilst the majority of self-employed are still men, the proportion of self-employed wo-

Figure 3

#### Business Starters by Economic Sector

in thousands



Source: Micro-census of the Federal Statistical Office, calculations by DIW Berlin.

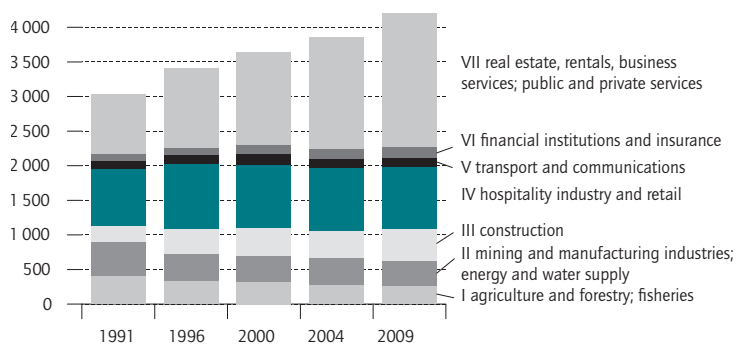
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More than half of all start-ups are now in the service sector.

Figure 4

#### Self-Employed by Industry Sectors

in thousands



Source: Micro-census of the Federal Statistical Office, calculations by the DIW Berlin.

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As a result of the structural change, in 2009 every second self-employed person was involved in the service sector.

men grew significantly—by around 25 percent in 1991 to 31 percent in 2009. However, despite this increase, the proportion of self-employed women compared to all women in the labor force in 2009 was only about seven percent, which merely represents about half of the same figure for men.

<sup>8</sup> See „Beruf und Karriere,“ Süddeutsche Zeitung, January 7, 2012.

Table 1

**Demographic and Socio-Economic Characteristics of the Business Starters**  
 in percent

	1996		2000		2004		2009	
	Business starters	Start-up rate <sup>1</sup>	Business starters	Start-up rate <sup>1</sup>	Business starters	Start-up rate <sup>1</sup>	Business starters	Start-up rate <sup>1</sup>
<b>Age</b>								
Under 25	7.1	0.5	7.1	0.5	7.6	0.7	9.2	0.6
25-34	42.6	1.4	36.4	1.3	30.4	1.5	31.4	1.2
35-44 years	29.9	1.0	34.3	1.1	36.7	1.2	32.7	0.9
45-54 years	15.5	0.6	15.9	0.6	18.5	0.7	19.0	0.5
55-64 years	3.9	0.3	5.0	0.4	5.7	0.5	6.0	0.3
65 years and older	0.9	0.8	1.2	1.1	1.1	0.8	1.7	0.7
<b>Sex</b>								
Male	66.7	1.0	64.6	1.0	63.5	1.1	58.4	0.8
Female	33.3	0.7	35.4	0.7	36.5	0.8	41.6	0.7
<b>Marital status</b>								
Unmarried	43.6	1.0	44.1	1.0	47.3	1.1	52.5	0.9
Married	56.4	0.8	55.9	0.8	52.7	0.9	47.5	0.7
<b>German national</b>								
Yes	87.2	0.9	88.1	0.9	88.1	1.0	82.8	0.7
No	12.8	1.4	11.9	1.3	11.9	1.4	17.2	1.5
<b>Education<sup>2</sup></b>								
No vocational training qualification	11.9	0.6	14.5	0.7	14.0	0.8	17.3	0.8
Training qualification	63.1	0.8	60.4	0.8	60.9	0.9	56.7	0.7
University degree	24.9	1.4	25.1	1.5	25.2	1.5	25.9	1.1
<b>Total in percent</b>	-	0.9	-	0.9	-	1.0	-	0.8
<b>Total in thousands</b>	<b>316</b>	-	<b>324</b>	-	<b>345</b>	-	<b>294</b>	-

1 Proportion of business starters to the general workforce.

2 Voluntary information. The numbers refer to the highest professional qualifications.

Source: Micro-census of the Federal Statistical Office, calculations by DIW Berlin.

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The proportion of unmarried persons among the self-employed is clearly increasing, and more than its share of the total population. While in 1991 the percentage of unmarried persons accounted for 25 percent of all self-employed, they accounted for over 35 percent in 2009. This trend is also driven by the development among the start-ups; in 2009, singles were in the majority at 52.5 percent.

### Increasing Numbers of Foreigners Are Becoming Self-Employed in Germany

One current issue is the development of entrepreneurial activities among immigrants. A dynamic development of start-ups can be observed among non-German nationals. In 1996, the rate of start-ups being founded by non-Germans in employment (1.4 percent) was significantly higher than the corresponding value for Germans (0.85 percent). While the rate of start-ups founded by foreigners has increased to 1.5 percent in recent

years, it fell among employed German nationals to 0.7 percent.

Accordingly, the proportion of non-German self-employed to all self-employed rose steadily during the study period—from 5.7 percent in 1991 to 9.6 percent in 2009. The percentage of self-employed from the non-German labor force almost doubled during the study period. In 2009, it reached 12.1 percent, surpassing the figure for Germans which was 10.8 percent. Unlike the German self-employed and against the general trend, non-Germans started new businesses in the trade and hospitality sectors, with a share of almost 50 percent.<sup>9</sup>

9 M. Fritsch, A. Kritikos, and A. Rusakova, „Who starts a business,“ (2012).

Table 2

**Demographic and Socio-Economic Characteristics of the Self-Employed**

in percent

	1991			1996			2000			2004			2009		
	Self-employed	Salaried employees	Self-employed rate <sup>1</sup>	Self-employed	Salaried employees	Self-employed rate <sup>1</sup>	Self-employed	Salaried employees	Self-employed rate <sup>1</sup>	Self-employed	Salaried employees	Self-employed rate <sup>1</sup>	Self-employed	Salaried employees	Self-employed rate <sup>1</sup>
<b>Age</b>															
Under 25 years	2.7	17.1	1.4	1.6	12.9	1.3	1.5	13.0	1.2	1.5	12.4	1.5	1.5	12.5	1.5
25-34 years	18.5	27.1	5.7	19.7	28.1	6.8	16.6	24.8	6.9	13.3	20.8	7.2	12.4	20.1	7.0
35-44 years	27.7	23.3	9.5	29.6	26.3	10.5	31.2	28.7	10.7	32.8	30.1	11.7	29.7	26.5	12.1
45-54 years	29.0	22.9	10.0	26.7	21.2	11.6	27.2	22.0	12.0	29.1	24.6	12.5	31.3	26.1	12.8
55-64 years	17.4	9.0	14.6	18.0	10.9	14.7	19.0	10.9	16.1	18.5	11.3	16.5	18.8	13.6	14.5
65 years and older	4.7	0.5	44.4	4.5	0.6	43.8	4.5	0.6	44.4	4.8	0.8	40.9	6.2	1.2	39.2
<b>Sex</b>															
Male	74.3	57.0	10.3	73.1	55.9	12.0	72.2	54.8	12.7	71.1	53.3	13.9	68.9	52.5	13.8
Female	25.7	43.0	5.0	26.9	44.1	6.0	27.8	45.2	6.4	28.9	46.7	7.0	31.1	47.5	7.4
<b>Marital status</b>															
Unmarried	24.7	37.3	5.5	27.9	38.5	7.1	29.9	40.3	7.6	32.5	41.9	8.6	36.3	46.1	8.8
Married	75.3	62.7	9.6	72.1	61.5	10.9	70.1	59.7	11.5	67.5	58.1	12.3	63.7	53.9	12.6
<b>German national</b>															
Yes	94.3	92.9	8.2	92.7	91.8	9.6	92.9	91.6	10.1	92.3	91.7	10.9	90.3	91.4	10.8
No	5.7	7.1	6.7	7.3	8.2	8.5	7.1	8.4	8.5	7.7	8.3	10.1	9.7	8.6	12.1
<b>Education<sup>2</sup></b>															
No vocational training qualification	11.8	17.2	5.6	10.5	17.6	5.8	9.6	18.3	5.4	9.2	17.6	5.8	10.0	18.3	6.2
Training qualification	69.8	71.7	7.8	64.7	68.4	8.9	63.8	67.9	9.2	62.2	67.5	9.9	60.1	65.4	10.1
University degree	18.5	11.1	12.7	24.8	13.9	15.5	26.6	13.7	17.3	28.7	14.8	18.7	29.9	16.2	18.4
<b>Total in percent</b>	-	-	8.1	-	-	9.5	-	-	10.0	-	-	10.8	-	-	10.9
<b>Total in thousands</b>	<b>3 037</b>	<b>34 408</b>	-	<b>3 409</b>	<b>32 574</b>	-	<b>3 643</b>	<b>32 960</b>	-	<b>3 852</b>	<b>31 807</b>	-	<b>4 215</b>	<b>34 447</b>	-

<sup>1</sup> Proportion of business starters to the general workforce.

<sup>2</sup> Voluntary information. The numbers refer to the highest professional qualifications.

Source: Micro-census panel of the Federal Statistical Office 2001-2004; calculations by DIW Berlin.

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## Education Is Key

It has been widely shown that university and college graduates have a relatively high propensity for starting new businesses and self-employment.<sup>10</sup> The Micro-census shows, however, that the majority of self-employed people have successfully completed a vocational training course in Germany, followed by university graduates and

then people with no professional or university degree.<sup>11</sup> The largest increase in self-employed people was indeed observed among university graduates; their numbers more than doubled during the study period from 501,000 (a good 18 percent of all self-employed) in 1991 to 1.25 million (30 percent) in 2009, and thus make a significant contribution to further explaining the increase in the number of self-employed. In contrast, the proportion of self-employed with a vocational training but no academic degree decreased by about ten percent

<sup>10</sup> T. Hinz and M. Jungbauer-Gans, „Starting a business after unemployment: Characteristics and chances of success,” *Entrepreneurship and Regional Development* 11 (1999): 317-333; or Caliendo M., F. Fossen, and A. Kritikos, „Risk attitudes of nascent entrepreneurs: New evidence from an experimentally-validated survey”, *Small Business Economics* 32 (2009), 153-167.

<sup>11</sup> In order to allow a comparison with other countries, the education levels were aggregated into three categories: (1) university degree, (2) vocational training, (3) no university degree or vocational training. M. Fritsch, A. Kritikos, and A. Rusakova, „Who starts a business,” (2012).



during the same period. It is also worth noting that the self-employment rate among workers with university degree increased from twelve percent in 1991 to 18 percent in 2009; this means that almost one in five university graduates are at the moment self-employed.

In the two groups, »vocational training« and »with no vocational or university education,« start-up rates are relatively small (less than one percent). A positive trend was observed for people without professional qualification—an increase of about 0.6 percent in 1996 to 0.75 percent in 2009. Overall, however, the proportions of start-ups by university graduates were much higher, ranging from 1.1 to 1.5 percent. In fact, a linear relationship in the context of our empirical study shows that the start-up trend increases with the level of education.

The panel data from the 2001 to 2004 Micro-census waves allows a more complete analysis of the labor market experience and educational background of entrepreneurs. This data showed that 31.2 percent of all those starting new businesses were in salaried employment prior to doing so, 24.3 percent were registered as unemployed one year before starting their business, and 11.4 percent were not in the labor market. Interestingly, 18 percent of entrepreneurs were already self-

employed but running a different company one year previously (Table 3). Only a minority of those started their businesses immediately after acquiring their educational qualifications. Consequently, about five percent of all those starting new businesses obtained their university degree and only about 3 percent attended some other form of training one year previously. This makes it clear that the vast majority of entrepreneurs gained practical professional experience prior to starting up their own businesses.

### Increases in Income from Self-Employment

The economic situation and the income of those in self-employment are discussed controversially in public. One argument often put forward against self-employment is that a disproportionate number of self-employed people are living with relatively low incomes.<sup>12</sup> For instance, the Bonn Institute for SME Research (IfM) stated in a recent study that »one quarter of the 4.3 million self-employed in Germany had a monthly net income of less than EUR 1,100.«<sup>13</sup>

The Micro-census allows a systematic calculation of the monthly net income of self-employed people compared to employed people.<sup>14</sup> Initially, the Micro-census confirmed that about one quarter of all self-employed people actually earn less than EUR 1,100 per month. However, in a comparison with the incomes of employed persons, it turns out that the proportion of low income earners among the employed individuals is much higher, namely 34 percent. At the same time, it also becomes clear that a much higher proportion of self-employed persons, almost 37 percent, have an income of more than EUR 2,300 per month, compared to about 17 percent of salaried employees (Table 4).

Based on panel data from the Micro-census, an entrepreneur's income three years after becoming self-employed can be compared to his or her former income in paid employment (Table 5). It is noticeable here that entrepreneurs who were previously in paid employment are recruited proportionally to employed persons from all income groups and not primarily those with relatively high or relatively low incomes. Three years after starting their businesses, there are significant income

Table 3

#### Labor Market Status and Educational Background of Business Starters One Year Prior to Starting the Business

Share of all business starters in percent

<b>Labor market status</b>	100.0
Unemployed	24.3
Not employed	11.4
Selfemployed without employees	11.6
Selfemployed with employees	6.1
Unpaid family workers	1.2
Public officials, judges	0.7
Employee (excluding apprentices)	31.2
Workers, home workers (excluding apprentices)	11.9
Clerical/technical apprentice	0.7
Commercial trainee	0.4
Short-commissioned/professional soldier	0.4
Basic military service conscript	0.0
Conscientious objector performing community service	0.1
<b>Attended a university/school</b>	100.0
School	0.6
Training	3.2
University	4.8
Never attended school or no details given	91.5

Source: Micro-census panel of the Federal Statistical Office, 2001-2004, calculations by DIW Berlin.

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<sup>12</sup> See „Nicht immer Schokolade,“ Süddeutsche Zeitung, October 17, 2011.

<sup>13</sup> E. May-Strobl, A. Pahnke, S. Schneck, and H.-J. Wolter, „Selbstständige in der Grundsicherung,“ Institut für Mittelstandsforschung (IfM), Bonn, Working Paper, no. 02 (2011).

<sup>14</sup> Net income constitutes all gains after income taxation, social security contribution, health insurance and the like.

gaps between these young entrepreneurs and their salaried counterparts. On the one hand, the proportion of self-employed achieving an income of less than EUR 1,100 per month after three years is significantly lower than among those in paid employment; on the other hand, the top 30 percent of this group of entrepreneurs have a higher income than the top 30 percent of those in salaried employment, and this is only three years after starting their businesses. Overall, the income distribution of entrepreneurs corresponds to the income distribution of the established self-employed after just three years.

A comparison of entrepreneurs' income three years after starting their businesses with the income of those in paid employment (Table 6) shows that 38 percent of young entrepreneurs who managed to survive a three-year period now have a higher income. For 45 percent, income has remained roughly the same as in previous paid employment, while income for 17 percent of self-employed after three years of starting business is lower. Particularly striking here is that many self-employed persons who had to survive on less than EUR 1,100 per month in paid employment (and that was at least 41 percent of all founders) succeeded in increasing their income from entrepreneurial activities. After three years of self-employment, only a quarter of all self-employed remained in the lowest income group. A similar development was recorded in the second-lowest income group, those earning between EUR 1,100 and EUR 2,300. In this group, the proportion of 42 percent in former paid employment decreased to 35 percent in entrepreneurial self-employment. The proportion of entrepreneurs in the three highest income groups rises accordingly. This shows that the change from paid employment to entre-

Table 4

**Monthly Net Income by Income Category in 2010**

	Self-employed		Paid employees (employees + workers + public officials)	
	in thousands	in percent	in thousands	in percent
Below EUR 1,100	962	26.8	11 134	34.0
EUR 1,100 to 2,300	1 315	36.6	15 930	48.7
EUR 2,300 to 3,200	536	14.9	3 498	10.7
EUR 3,200 to 4,500	363	10.1	1 506	4.6
4,500 to 5,500 Euro	416	11.6	636	1.9
<b>Total</b>	<b>3 592</b>	<b>100.0</b>	<b>32 704</b>	<b>100.0</b>

Sources: Federal Statistical Office: Fachserie 1. Reihe 4.1.1 Bevölkerung und Erwerbstätigkeit. Stand und Entwicklung der Erwerbstätigkeit (Wiesbaden: 2011), calculations by DIW Berlin.

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preneurial self-employment has paid off financially for many. This also applies to persons in the lowest income groups. Low income is not primarily a question of the type of occupation, but rather a question of the industry and, above all, the level of education. Particularly for paid employees with relatively low incomes, the step into entrepreneurial self-employment may be an opportunity to improve their financial situations.

**Conclusion**

The analysis based on the Micro-census has revealed that the number of self-employed in Germany increased by 40 percent over the past two decades. At the same time, this study puts the discussion about low in-

Table 5

**Income Distribution of Business Starters, Self-Employed and Employees**

Percentile	Business starters <sup>1</sup>				Self-employed	Salaried employees
	2001	2002 (starting year)	2003	2004	2001-2004	2001-2004
10.	below EUR 1,100	below EUR 1,100	below EUR 1,100	below EUR 1,100	below EUR 1,100	below EUR 1,100
20.	below EUR 1,100	below EUR 1,100	below EUR 1,100	below EUR 1,100	below EUR 1,100	below EUR 1,100
30.	below EUR 1,100	below EUR 1,100	below EUR 1,100	EUR 2,100 to 2,300	EUR 2,100 to 2,300	below EUR 1,100
40.	below EUR 1,100	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300
50.	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300
60.	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 1,100 to 2,300
70.	EUR 1,100 to 2,300	EUR 1,100 to 2,300	EUR 2,300 to 3,200	EUR 2,300 to 3,200	EUR 2,300 to 3,200	EUR 1,100 to 2,300
80.	EUR 1,100 to 2,300	EUR 2,300 to 3,200	EUR 3,200 to 4,500	EUR 3,200 to 4,500	EUR 3,200 to 4,500	EUR 1,100 to 2,300
90.	EUR 2,300 to 3,200	EUR 3,200 to 4,500	EUR 4,500 to 5,500	EUR 4,500 to 5,500	EUR 4,500 to 5,500	EUR 2,300 to 3,200

<sup>1</sup> Only business starters who were in paid employment in 2001.

Source: Micro-census panel of the Federal Statistical Office, 2001-2004, calculations by DIW Berlin.

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Table 6

**Income Development of Business Starters<sup>1</sup> in the First Years after Start-Up**  
in percent

Monthly net income	2001	2002 (starting year)	2003	2004	Individual income in 2004 compared to 2001		
					reduced	unchanged	increased
Below EUR 1,100	41.5	37.8	33.3	27.0	0.0	48.7	51.4
EUR 1,100 to 2,300	42.2	32.6	35.2	35.0	19.1	47.6	33.3
EUR 2,300 to 3,200	7.4	13.3	8.3	14.0	55.6	33.3	11.1
EUR 3,200 to 4,500	2.2	8.1	12.0	12.0	0.0	33.3	66.7
EUR 4,500 to 5,500	3.0	5.2	6.5	7.0	25.0	50.0	25.0
EUR 5,500 to 7,500	2.2	1.5	0.9	2.0	66.7	33.3	0.0
EUR 7,500 to 10,000	0.7	0.7	1.9	1.0	100.0	0.0	0.0
EUR 10,000 to 18,000	0.7	0.0	0.0	1.0	0.0	0.0	100.0
More than EUR 18,000	0.0	0.7	1.9	1.0	-	-	-
Closure	-	-	20.0	7.4	-	-	-
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>17.0</b>	<b>45.0</b>	<b>38.0</b>

<sup>1</sup> Only business starters who were in paid employment in 2001.

Source: Micro-census panel of the Federal Statistical Office, 2001-2004, calculations by DIW Berlin.

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comes among self-employed in a new light. It shows that for a substantial proportion of entrepreneurs, the step into self-employment brings an increase in net income three years after starting up a new business. Whilst there are also low-earners among the self-employed, their proportion is much smaller than among salaried employees. The step into entrepreneurial self-employment normally leads not only to greater autonomy and self-realization, but can also be financially rewarding. However, an improvement in income for the self-employed often comes with more work and of course a greater entrepreneurial risk.

It is unclear whether we can expect a further increase in the numbers of the self-employed in Germany. The demographic development suggests that we should expect stagnation. In addition to the mere numbers of self-employed, the quality of their enterprises is also crucial. The boom-like increase in the proportion of self-employed with a university degree leads us to expect an increase in the quality of start-ups and underlines the importance of academic training for start-up activities. From the point of view of maintaining high quality start-up dynamics, it is therefore important for the German economy not only to maintain but to increase the number of well-qualified university graduates. To improve the level of qualification, entrepreneurs could continue to be supported through coaching, similar to the support offered by the German Federal Government since 2007 through two programs on start-up coaching. It is hoped that such programs will significantly contribute to increasing the proportion of start-ups that create

new jobs. However, the effectiveness of such programs is as yet unconfirmed.

All in all, it can be said that a stronger entrepreneurial culture has developed in Germany over the past two decades. Consumers and the German economy have benefited from this culture in many ways.

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