



Fakultät für Wirtschaftswissenschaften
Faculty of Management and Economics



Institut für Soziologie
Department of Sociology

IfS Discussion Paper 03/2019

**Independent Professionals:
Knowledge-intensive work between
the professions and new expert
occupations**

Michael T. Knapp

Discussion
PAPERS

Michael T. Knapp

Independent Professionals: Knowledge-intensive work between the professions and new expert occupations

IfS Discussion Paper 03/2019
Institut für Soziologie, Alpen-Adria-Universität Klagenfurt
Department of Sociology, Alpen-Adria-Universität Klagenfurt

IfS Discussion Paper
ISSN 2306-7373 (Internet)

© 2019 by the author

Michael T. Knapp is Predoc Scientist at the Department of Sociology, Faculty of Management and Economics, Alpen-Adria-Universität Klagenfurt, Austria.
michael.knapp(at)aau.at

Institut für Soziologie
Fakultät für Wirtschaftswissenschaften
Alpen-Adria-Universität Klagenfurt
Universitätsstr. 65-67 | 9020 Klagenfurt | Austria

Tel. +43 2700 3400
Fax +43 2700 993400

<http://www.aau.at/soziologie>
sozio(at)aau.at

All papers published in this series can be accessed here:
<http://www.aau.at/soziologie>

Select *Publications/Discussion Papers* from the menu bar

Table of Contents

Abstract.....	4
1 Introduction.....	5
2 Independent professionals as a category of self-employed workers without employees	5
2.1 Knowledge-based and knowledge-intensive (business) services	7
2.2 The liberal professions and new expert occupations	8
3 Independent professionals (iPros) in Austria: Trends between 2004 and 2017.....	10
3.1 Methodology and data	10
3.2 (Solo) Self-employment in Austria by economic sectors	11
3.3 (Solo) Self-employment in knowledge-based service sectors	13
3.4 (Solo) Self-employment in knowledge-based occupations	15
Conclusion	18
Acknowledgements.....	18
References	19

Abstract

Independent professionals (iPros) constitute a growing portion of the labour market in knowledge-based (business) services (KBS) and professional occupations. They work as self-employed workers without employees, sell specific knowledge-intensive (intellectual) services in external labour markets outside of standard employment relationships and contribute, among other things, to the innovative capacity of other companies. As part of the self-employed workforce they practice traditional 'liberal' professions (lawyers, doctors, journalists etc.) as well as new expert occupations (consulter, software developer etc.). By drawing on time series data from the Austrian labour force survey (LFS) this paper presents growth trends for iPros in knowledge-based service sectors and professional occupations in Austria for the time period 2004 to 2017. The results show that iPros are the fastest growing group on the Austrian labour market.

Keywords: independent professionals (iPros), freelancer, solo self-employment, knowledge-based services, entrepreneurship

1 Introduction

The nature of work and the institutional structure in which work is performed have changed multiple times throughout history. With the evolution of digital technologies and the internet, many of today's jobs did not exist a few years ago and routine work is likely to be automated in near future (Frey & Osborne, 2013). In this disruptive economic environment specific personal skills become important for people to secure their jobs (EPSC, 2016). A highly skilled and creative workforce is seen as a main driving factor for competitive advantage in the knowledge economy or "informational economy" (Castells, 2010) where ideas and knowledge are the engines of economic growth and prosperity (Audretsch, 2009).

Currently, the majority of workers in Europe still hold permanent contracts however, with those enormous changes in the digital economy we recognise shifts away from permanent employment relationships to alternative work arrangements such as short-term contracts, part-time work or teleworking (Spreitzer, Cameron, & Garrett, 2017). Independent professionals (iPros), mostly called freelancers in the creative industries, are at the core of these developments in workforce (Leighton & Brown, 2013). They are mobile, independent workers who provide their specific services to clients (e.g. in the areas of design, software, video, advertising, consulting) personally, independently and professionally. They offer their work-force on the external labor market outside of standard employment relationships and mostly outside of or in-between established organizational boundaries (Osnowitz, 2013). As such, they are generally classified under the statistical category of solo self-employed workers in the service sector, differing from other (solo) self-employed workers in the agricultural, commercial or trade sectors (Bögenhold, Heinonen, & Akola, 2014).

2 Independent professionals as a category of self-employed workers without employees

Although self-employment can be regarded as universal with regard to its employment classification, the "group" of self-employed workers is not homogenous (Bögenhold, 2019). The statistical category of self-employment contains different socio-economic groups, which are only partially covered by the distinction between the self-employed with employees ('employers') and the self-employed without employees ('own-account workers') (Dvouletý, 2018). In order to capture the different working and living situations of these types of self-employed workers properly additional or other criteria might be necessary.

A recent study conducted by the Eurofound (2017) on self-employment in Europe has shown that the self-employment workers in Europe (32.0 million) are heterogeneous in terms of economical sustainability, operational autonomy and entrepreneurialism and that they could accordingly be clustered in 5 different "groups". In two of the five clusters (employers: 7.4 million and stable own-account workers: 8.3 million) self-employed workers

face favorable economic conditions, have more autonomy in their working lives and are more likely to be self-employed out of choice than of necessity. On the other hand there are two clusters (vulnerable: 5.4 million and concealed: 2.6) where the self-employed people are generally more dependent, have less autonomy over their work, lower levels of income and less job security (Eurofound, 2017, pp. 17-20). The self-employed workers without employees are represented across all five clusters, which indicates that the diversity in this group is even more pronounced than in the group of employers.

With regard to economic sectors and occupations the report furthermore suggests that most self-employed workers in knowledge-based service sectors and professional occupations are distinctive from self-employed workers in the industry, construction or other service-based sectors and occupations (Eurofound, 2017, p. 21). Highly skilled and educated individuals who work on their own without any employees in knowledge-based service sectors and professional occupations are not examined in detail in the report, although they constitute a growing part of the self-employed workforce in Europe (Leighton & Brown, 2013).

One of the first studies carried out explicitly on independent professionals (iPros) in Europe defines them as „independent workers without employees engaging in a service activity and/or intellectual service not farming, craft or retail sectors (Rapelli, 2012, p. 11)“. According to this definition of iPros, there were approximately 8.6 million people in the year 2011 that worked as micro businesses in specific professional service sectors in Europe. In terms of the total European working population this is less than 4%, but if you look at this number as a proportion of all self-employed people (employers and independent workers without employees in all sectors combined) or as a proportion of all solo self-employed, then iPros account for 26% or 37% (Rapelli, 2012, p. 12).

The definition proposed by Rapelli (2012) discerns iPros from other self-employed workers by classifying them according to the economic sectors in which they operate. By relying on Eurostat's NACE classification, which is a statistical classification of different economic activities, iPros can be defined in terms of particular service sectors. Therefore, iPros are all solo self-employed persons who work in knowledge-based service sectors (tertiary sector) without the retail, transportation, accommodation & food services and public administration sectors (Rapelli, 2012, p. 9). Such a broad definition makes it possible to statistically capture a large number of micro-self-employment in knowledge-based sectors, but does not do justice to the heterogeneity of this sector. In particular, the distinction between knowledge-intensive work that requires highly specific skills and long training periods and other personal services is not adequately shown here.

Another way of defining and estimating iPros or freelancers as they are also called is by using occupational classifications systems like the International Standard Classification of Occupations (ISCO) or the Standard Occupational Classification (SOC) System. Kitching (2015)

for example defines freelancers according to the SOC major groups 1 to 3, which refer to ‘managers, directors and senior officials’, ‘professional occupations’ and ‘associate professional occupations’. Occupations in these three groups correspond with knowledge-intensive non-manual work and therefore provide a criterion to demarcate iPros from other types of own-account working (Kitching, 2015, p. 17).

Both approaches to define iPros and empirically estimate their numbers in the current workforce are possible and have their advantages and disadvantages. In this paper we will apply first a sector-related and then an occupation-related characterization of own-account workers in knowledge-based services (Mason, 2018). This approach allows us to compare the estimates made by both definitions.

2.1 Knowledge-based and knowledge-intensive (business) services

Knowledge-based services (KBS) or knowledge-intensive (business) services (KIBS) are central elements of the so-called “informational economy” (Castells, 2010), in which knowledge production, information processing and symbolic communication became the main source of economic productivity, growth and prosperity (Audretsch, 2009). The creation of value in this type of economy is based on (new) information technologies, which in turn depend on the capabilities for development of such technologies and their applicability in different sectors (Castells, 2010, p. 258).

The need for KBS arises from the unequal distribution of knowledge and information in society (Hayek, 1945). It is often the case that knowledge needed to solve certain tasks or problems is not immediately accessible. Actors possess only ‘limited stocks of knowledge’, whose contents and forms depend on prior individual or organisational resources, particular development paths and social embedding in groups of individuals or organisations. In order to carry out particular tasks, actors are therefore dependent on knowledge that other actors might have at their disposal and to which one has no direct access. For example the production of a mobile application often requires specialized knowledge inputs that could not be immediately available in the company. KBS make it possible to access this knowledge relatively quickly through the market without having to build it up in one’s own company.

The services supplied by KBS firms thus rely on professional knowledge or expertise relating to specific technical or functional domains, which can either be a source of information or form intermediate inputs in the products, services or production processes of other businesses (Windrum & Tomlinson, 1999, p. 392). Accordingly, KBS can play an important role for the innovativeness of companies in other sectors and for the innovation systems as a whole (Muller & Doloreux, 2009). K(I)BS can generally be defined as services “that provide knowledge-intensive inputs to business processes of other organisations such as Computer services, R&D services, Legal, Accountancy and Management services, Architecture,

Engineering and Technical Services, Advertising and Market Research” (Miles, Belousova, & Chichkanov, 2018, p. 5).

The provision of KBS to organisations can, in principle, take place in several ways. Different institutional or organisational forms of the provision of professional services have developed historically under different economic and social conditions (Barley & Kunda, 2006). Today the majority of KBS are being provided either externally by Professional Service Firms or internally by so-called corporate or organisational professionals (Muzio, Ackroyd, & Chanlat, 2008). In both ways the people who provide these KBS are mainly employed and are part of an organisational hierarchy.

The traditional form in the provision of professional services although, has been the ‘solo practitioner’ who is self-employed and works either alone (sometimes with a small number of employees and/or family members) or with a limited number of associated partners in a partnership agreement (Pedersini & Coletto, 2010, p. 15). This way of providing professional services represents, so to speak, the ‘prototype’ of professional practice and has shaped the self-image of traditional liberal professions. To put it in the words of Hughes (1963): “The true professional, according to the traditional ideology of professions, is never hired. He is retained, engaged, consulted, etc., by some one who has need of his services. He, the professional, has or should have almost complete control over what he does for the client” (Hughes, 1963, p. 663).

Whether this ideal ever coincided with the actual reality of professional work remains to be seen. It should be noted however, that with the rapid growth of professional services and occupations during the 20th century organisational employment became the dominant form of professional practice. But with the rise of the digital economy we now see sort of a ‘revival’ of self-employment without employees in KBS sectors. In order to point out that iPros do not represent a completely new phenomenon they are also called sometimes “second-generation independent workers” (Bologna, 2018). They offer specific intellectual services in the KBS sectors on a freelancer basis and often collaborate with other individuals or organisations, but do not employ their own staff. Through their specific knowledge and skills, iPros contribute significantly to generate value for businesses by helping in the development and implementation of innovative products and services based on modern information technologies (Burke & Cowling, 2015).

2.2 The liberal professions and new expert occupations

The provision of KIBS is dependent on people who have the necessary expertise in specific knowledge fields. Traditionally, the (liberal) professions represented the social form in which “expert knowledge” (in form of specific services) could be made available to the economy and society in general (Susskind & Susskind, 2015). A definition laid out by the

Court of Justice of the European Union defines liberal professions according to activities ...

"Which, inter alia, are of a marked intellectual character, require a high-level qualification and are usually subject to clear and strict professional regulation. In the exercise of such an activity, the personal element is of special importance and such exercise always involves a large measure of independence in the accomplishment of the professional activities." (Henssler & Wambach, 2014, p. 8)

This definition makes it clear that the liberal professions provide knowledge-based or 'intellectual' services, which have a strong personal character and require a high degree of independence or autonomy in the performance of these tasks. Historically, the exercise of a liberal profession has meant that one was self-employed and had to sell his or her service on the market and earn income from remuneration for their personal intellectual work (Hughes, 1960, p. 59). Independence and personal autonomy was regarded as a prerequisite for the personal provision of services for example in the medical or legal professions. This independence in the exercise of one's profession was accompanied by a large number of legal regulations and restrictions, in particular with regard to access to the professions, professional organisation, supervision and obligations (Henssler & Wambach, 2014).

The development towards an informational economy, in which technological competence and knowledge have become central competitive factors, is closely linked to the emergence and spread of new knowledge-based or 'informational' occupations. In the second half of the 20th century or so we have seen new "expert occupations" (e.g. software developer, project managers, consultants) arise (Wyatt & Hecker, 2006). These new knowledge-based occupations were quite different from traditional "liberal professions" in their patterns of organization and delivery of expertise (Muzio et al., 2008).

Professional regulation, which is a classic characteristic of liberal professions, exists among the 'new experts', if at all only to a limited extent. Access to these new professional occupations is also hardly limited. Furthermore, the practice of new expert occupations usually does not require any predefined academic pathways and does not build on established knowledge stocks that are defined and prescribed by vocational organisations. The practice of these occupations depends rather on the individual abilities and relationships of the individual, which are sold in the form of a service either on the labour market or in the markets for goods and services.

Although, new expert occupations lack characteristic patterns of organisational or collegiate professions there are obvious similarities between traditional forms of professional work and new patterns of 'expert work' (Alvesson, 2001). Both can be categorized as 'knowledge workers' because they are involved in the production and dissemination of knowledge and information. In the traditional (liberal) professions as well as in new expert occupations

people apply their “practical expertise” as a service to help their clients to cope better with specific problems or challenges (Susskind & Susskind, 2015).

This expertise comes in terms of advice or other symbolic actions and is grounded in a more or less systematic field of specialised knowledge (Hughes, 1963). Expertise in a specific field requires extensive training and substantial effort and devotion to the subject and is closely connected to the work of peers. Different aspects of knowledge (e.g. technical, procedural, tacit) relate in complex ways to produce what is called “practical expertise” and which can be seen as the core of professional work (Susskind & Susskind, 2015).

The new expert occupations do not differ from the “traditional” liberal professions in the fundamental importance of knowledge or in the relevance of “practical expertise”, but rather in the way in which KBS are being provided. Thus, the difference is not in the professional specialisation or occupational organisation per se, but rather in the way in which KBS are being produced and made available to private or organisational customers. It is the “social form of professional practice” (Bologna, 2018, p. 199) that makes the difference between the traditional liberal professions and the new expert occupations. If the exercise of a traditional liberal profession takes place in a market environment, which is substantially different from the original professional context (e.g. the intellectual work is performed via an online platform), then the traditional professions can also be counted among the new expert occupations (Bologna, 2018, pp. 198-199).

3 Independent professionals (iPros) in Austria: Trends between 2004 and 2017

Solo self-employed persons working in KBS sectors and/or professional occupations are a growing part of the economy and the workforce around the globe. The following analysis is a first attempt to explore this group of self-employed workers in Austria and thus to see whether this group is growing here as well. To analyse the number of iPros in Austria over time and to see whether iPros are increasing numerically we draw on annual time series data from the Austrian Labour Force Survey (LFS). A continuous time series from the year 2004 to 2017 is thus available and forms the basis for the following analysis.

We estimate the number of iPros in Austria in two ways. We will first apply a sector-related characterization of own-account workers in KBS sectors (Mason, 2018) and then depict the numbers of own-account workers in skilled non-manual occupations (Kitching, 2015). This approach allows us to compare the estimates made by both definitions and helps to include a wide range of different iPros.

3.1 Methodology and data

The following analysis is based on data from the microcensus of the LFS, which is a quarterly sample survey collected by the Statistik Austria. The microcensus provides estimates of workforce numbers of the Austrian resident population. Around 22,500 households

throughout Austria are surveyed each quarter. The microcensus is a sample with fifth rotation, which means that one fifth of households finishes the survey cycle every quarter and one fifth of new households begin it. Since the data is extrapolated, values with less than 6,000 persons are highly random and values with less than 3,000 persons are not statistically interpretable. This means that a reasonable analysis of self-employed workers at economic sectors (Ö-NACE) and occupational categorization (Ö-ISCO) is only possible at level 1 and in the occupational sub-major groups.

3.2 (Solo) Self-employment in Austria by economic sectors

The proportion of self-employed workers in the Austrian workforce has been relatively stable since the beginning of the 21st century. According to data from the LFS, the proportion of all self-employed workers in Austria was 11.4% in 2004 and has slightly shrunk to 10.9% in 2017. This is generally below the average of all 28 EU countries, which was 14.9% in the year 2015 (Eurofound, 2017, pp. 7-8).

Between 2004 and 2017, the number of self-employed people with employees ('employer') in Austria has risen by 37.300 (23,2%) while the number of self-employed people without employees ('own-account workers') has increased only by 10.000 (3.9%). That means that the proportion of the solo self-employed among all self-employed persons declined slightly from 61.5% in 2004 to 57.4% in 2017. The proportion of the solo self-employed in the total employed labour force in Austria has also dropped slightly from 7% in 2004 to 6.3% in 2017.

This slow growth in the numbers of self-employed without employees within the period under consideration gives the impression that solo self-employment is a relative stable employment category. But a closer look at the three economic sectors reveals that behind the aggregate numbers divergent trends are taking place. As Figure 1 shows, own-account workers have developed differently in the three economic sectors in Austria. While the number of own-account workers in agriculture and forestry has declined sharply since 2004 and the number of solo self-employed workers in the industry is also slightly shrinking, the number of self-employed workers without employees in the services has grown markedly.



Figure 1: Change in the numbers of types of self-employment in Austria, 2004-2017

A comparison of the self-employed without employees in the service sectors with their salaried counterparts (employees) in Table 1 shows that the solo self-employed persons in the service sectors is one of the fastest growing employment categories in the Austrian labour market. While salaried employment in the services is growing on average 1.5% per year, growth in own-account workers in services is on average over 2.5% per year.

Table 1: Employed persons by economic sector in Austria, 2004-2017

	Services			Industry and Commerce			Agriculture and forestry		
	2004	2017	avg-growth %	2004	2017	avg-growth %	2004	2017	avg-growth %
Employees	2230.6	2704.1	1.49	961.9	999.9	0.30	28.8	29.1	0.08
Own-account workers	127.9	177.3	2.54	27.5	22.0	-1.70	101.5	67.6	-3.08
Employers	112.6	138.6	1.61	34.4	38.7	0.91	13.9	20.9	3.19

This rapid growth of solo self-employment in the service sector since 2004 is an indication

of an on-going transformation to a service economy. However, from this figure it is not clear which service sectors are driving the growth. Therefore, a distinction must be made between KBS and other service sectors to see if the growth comes primarily from knowledge-based or other services.

3.3 (Solo) Self-employment in knowledge-based service sectors

Self-employed workers in K(I)BS sectors can be specified and delimited in different ways. We define them according to an adopted list of knowledge-intensive service sectors provided by Eurostat (2016). This list has been crosschecked with other existing classifications of knowledge-based service sectors by Rapelli (2012) and Mason (2018). By using the (Ö-) NACE classification it is thus possible to estimate the numbers of the self-employed in different ‘intellectual’ service sectors. The following table lists those service sectors that fall under knowledge-based/intensive services and are referred here as knowledge-based service (KBS) sectors:

Table 2: KBS sectors by (Ö-) NACE code

(Ö)-NACE code	Business Type
<J> (58-63)	Information and Communication
<K> (64-66)	Financial and Insurance Activities
<M> (69-75)	Professional, Scientific and Technical Activities
<P> (85)	Education
<Q> (86-88)	Human Health and Social Work Activities
<R> (90-93)	Arts, Entertainment and Recreation

In comparison to Rapelli’s definition of iPros sectors, we slightly narrow down the scope of service sectors included and thereby limit them to business types proposed by Mason in his paper on Entrepreneurship in knowledge-based services. We have therefore excluded the sectors “Real Estate Activities (<L>”, “Administrative and Support Service Activities (<N>)” and “Other Service Activities (<S>)” from our delimitation of KBS sectors. In order to make a distinction between KBS and other service sectors, these sectors just mentioned, together with the sectors “Wholesale and Retail Trade (<G>”, “Transportation and Storage (<H>”, “Accommodation and Food Service Activities (<I>)” are here referred to as “Non-KBS” sectors. The following figure (Figure 2) shows that the number of (solo) self-employed workers (own-account workers) in both KBS and NonKBS sectors in Austria has increased significantly since 2004, but to varying degrees. The number of solo self-employed workers in KBS sectors

(iPros) has increased considerably during the period under review. In 2004 the number of iPros in Austria was 72.200 and has increased to over 100.000 people in 2013. Since then the number has never dropped under this limit. With an average annual growth rate of 3% this group has shown a remarkable growth trend over the period under review (see Table 3). The proportion of iPros among all solo self-employed people in all services grew also from 56% in 2004 to 60% in 2017. This means that iPros working in KBS sectors represent the majority of solo self-employed in the service sectors.

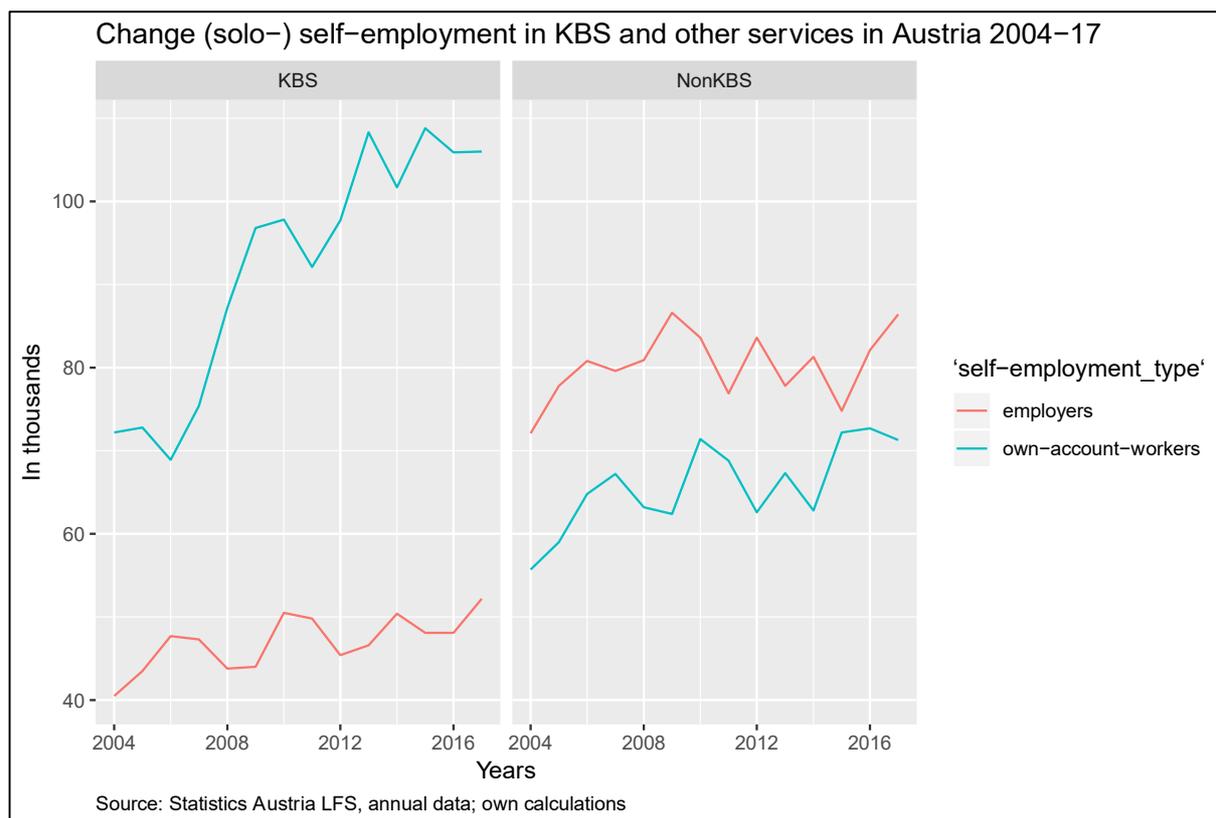


Figure 2: Change in the numbers of (solo-) self-employment in KBS and NonKBSs sectors, 2004-2017

The self-employed with employees (employers) are generally more strongly represented in the ‘NonKBS’ than in the KBS sectors. However, employers in KBS sectors show a stronger growth pattern over the entire period of observation. Employers in these sectors grew with an average annual growth rate of about 2% faster than employers in other service sectors (NonKBS), which grew only 1.4% per year on average (see Table 3). The share of employers in KBS sectors to all employers in the service sectors has thus increased also from 36% in 2004 to 38% in 2017.

Table 3: Average Growth (Solo) Self employment in KBS and NonKBS sectors

	Knowledge-based Services (KBS)			Other Services (NonKBS)		
	2004	2017	avg-growth %	2004	2017	avg-growth %
Employers	40.5	52.2	1.97	72.1	86.4	1.40
Own-account workers	72.2	106.0	3.00	55.7	71.3	1.92

From this preliminary results it becomes clear that since the beginning of the 21st century Austria has seen a substantial increase of self-employed professionals (in particular iPros) at the sectoral level. A more detailed analysis of sectoral differences should not be carried out here due to limited space. In the next section we will look at iPros through an occupational lens and will define them according to knowledge-based occupations.

3.4 (Solo) Self-employment in knowledge-based occupations

Knowledge-based occupations include those occupations that require specific personal skills and expert knowledge to perform the related tasks and duties. The (Ö-) ISCO-08 (International Standard Classification of Occupations) provides a standardized classification structure to group specific occupations according to skill level and specializations. It distinguishes 10 major occupational groups that are associated with different skill levels in terms of nature and duration of qualifications, training and work experience. The ISCO major groups 1 to 3 refer to ‘Managers’, ‘Professionals’ and ‘Technicians and associate professionals’.

Kitching (2015) argues, that these three groups correspond broadly with skilled non-manual occupations and are therefore a possible criterion to demarcate ‘freelance work’ or knowledge-based work from other types of own-account working (Kitching, 2015, p. 17). Although managerial occupations (major group 1) could in the light of changing employment relationships (Wynn, 2016) be practiced in the form of solo self-employment, this is presumably the exception rather than the rule.

Since the change from the old occupational classification ISCO-88 to the new ISCO-08 the numbers for own-account workers in major group 1 (‘Managers’) are no longer recorded in the Austrian LFS, we will focus here on the ISCO major groups 2 and 3 and define (solo) self-employment in knowledge-based occupations according to the ‘sub-major’ groups in these two groups. The following table lists those occupations, which should be named here as KBS occupations. This classification corresponds to that of Mason (2018), who defines KBS occupational groups according to occupation codes from the US Bureau of Labour Statistics (BLS).

Table 4: Knowledge-based occupations by ISCO-08 code

Major Group	Sub Major	Occupation
<2>	<21>	Science and engineering professionals
	<22>	Health professionals
	<23>	Teaching professionals
	<24>	Business and administration professionals
	<25>	ICT professionals
	<26>	Legal, social and cultural professionals
<3>	<31>	Science and engineering associate professionals
	<32>	Health associate professionals
	<33>	Business and administration associate professionals
	<34>	Legal, social, cultural and related associate professionals
	<35>	Information and communications technicians

The change in the occupational classification system from ISCO-88 to ISCO-08 makes it necessary to draw separate time series for the years 2004 to 2010 and for 2011 to 2017. Because of regroupings in occupational groups the major groups are not directly comparable, but they show the change of numbers in these groups in the two time periods.

As shown in Figure 3 the number of solo self-employed professionals in academic occupations (ISCO-Class <2>) has risen considerably from 2005 to 2010 and from 2011 to 2013. After reaching peak in the year 2013 the number of iPros working in highly skilled jobs has remained constantly over 70.000. The number of solo self-employed professionals working in associated professional jobs (ISCO-Class <3>) has also increased from 2004 to 2010. After the changeover from ISCO-88 to ISCO-08 the number dropped from nearly 68.200 to 46.200 because of regroupings.

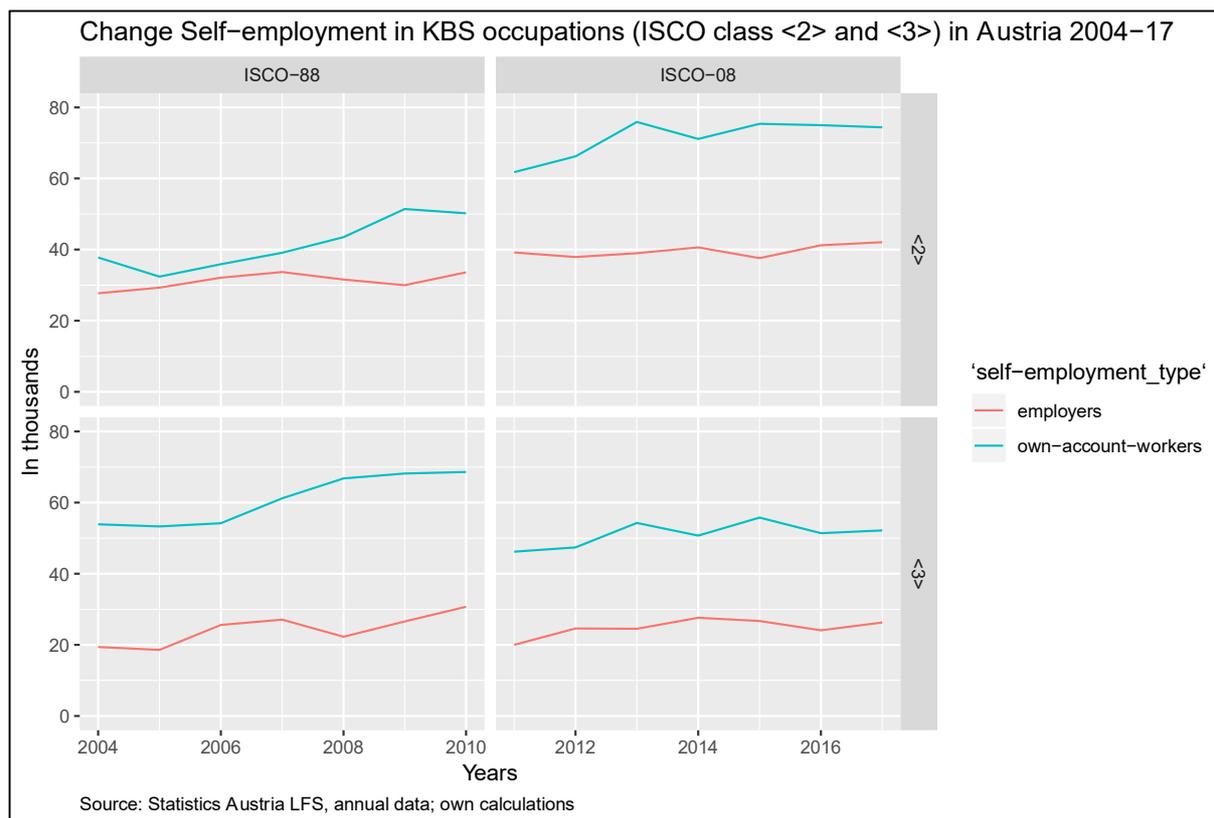


Figure 3: Change in the numbers of (solo-) self-employment in KBS occupations, 2004-2017

Accordingly, there has been a significant growth trend for iPros in both ISCO-classes over the two observed time periods. Although, with an average growth rate of 4.8% per year for the period between 2004 and 2010 and a growth rate of 3.1% for the period between 2011 and 2017 solo self-employed professionals in the academic professions are growing slightly faster than professionals in associated occupations, which grew by an average of 4.1% and 2.1% accordingly.

Table 5: Average Growth (Solo) Self employment in professional occupations

Type / ISCO-Class	<2>			<3>		
	2004	2010	avg-growth %	2004	2010	avg-growth %
Employers	27.7	33.6	3.27	19.4	30.7	7.95
Own-account workers	37.8	50.2	4.84	53.9	68.6	4.10
	2011	2017	avg-growth %	2011	2017	avg-growth %
Employers	39.2	42.1	1.20	20	26.3	4.67
Own-account workers	61.8	74.4	3.14	46.2	52.2	2.06

Conclusion

Highly skilled and educated individuals who work in KBS sectors and professional occupations are a major component of the economy in digital societies. They now constitute also a growing part of the self-employed workforce in Austria. Since the year 2004 the proportion of own-account workers in total Austrian labour force has been relatively unchanged. But this aggregated number conceals various changes in the sectoral composition of the self-employed workforce. While the number of own-account workers in farming and forestry has shrunk dramatically the number of solo self-employed in the service sectors has increased at the same time. To further explore these developments in the service sectors and to see whether this changes can be attributed to knowledge intensive sectors and occupations we analyzed the number of (solo) self-employment in KBS sectors and occupations over time.

As we have shown here self-employment in KBS sectors is growing faster than in other service sectors in Austria. Especially, the number of self-employed people without employees in KBS sectors has increased on average by 3% annually between 2004 and 2017, compared to 1.9% in other services. With regard to occupational classification we have also seen that the number of solo self-employed people in professional occupations has increased considerably since the beginning of the 21st century. These developments suggest that iPros or freelancers who work as solo self-employed experts are becoming an integral part of an informational or entrepreneurial economy and society (Audretsch, 2009). They work as “mobile, independent workers, selling specific services in external labor markets outside standard, organization-based employment” (Osnowitz, 2013, p. 1).

Although professional and knowledge-intensive (business) services (K(I)BS) have been identified as an essential part of competitiveness in knowledge driven economies (Ferreira, Raposo, Fernandes, & Dejardin, 2016) research in entrepreneurship on the specifics of these firms and their diverse forms of organizations is still limited (Landström, 2008). Recent research has shown that KBS businesses are different from other service providers and production companies in their entrepreneurial development and financial performance and thus need special consideration from educational system and policy (Mason, 2018).

In this paper we have taken both an economic sector-related and an occupational-related approach to trace the trends in the number of (solo) self-employed people in Austria over time. This approach has the advantage of inclusion of a wide range of different knowledge-intensive service sectors and also provides information of the skill and qualification level of self-employed service professionals. The findings in this paper can be seen as a first explorative approach to the further analysis of this emerging group in the labour force.

Acknowledgements

The Labour Force Survey time series data used for this paper have been taken from the Statistical Database STATcube which is an online tool from the Statistics Austria.

References

- Alvesson, M. (2001). Knowledge Work: Ambiguity, Image and Identity. *Human Relations*, 54(7), 863-886. doi:10.1177/0018726701547004
- Audretsch, D. B. (2009). The entrepreneurial society. *The Journal of Technology Transfer*, 34(3), 245-254. doi:10.1007/s10961-008-9101-3
- Barley, S. R., & Kunda, G. (2006). Contracting: A New Form of Professional Practice. *Academy of Management Perspectives*, 20(1), 45-66. doi:10.5465/amp.2006.19873409
- Bögenhold, D. (2019). From Hybrid Entrepreneurs to Entrepreneurial Billionaires: Observations on the Socioeconomic Heterogeneity of Self-employment. *American Behavioral Scientist*, 63(2), 129-146. doi:10.1177/0002764218794231
- Bögenhold, D., Heinonen, J., & Akola, E. (2014). Entrepreneurship and Independent Professionals: Social and Economic Logics. *International Advances in Economic Research*, 20(3), 295-310. doi:10.1007/s11294-014-9474-z
- Bologna, S. (2018). *The Rise of the European Self-Employed Workforce: Mimesis International*.
- Burke, A., & Cowling, M. (2015). The Use and Value of Freelancers: The Perspective of Managers. In A. Burke (Ed.), *The Handbook of Research on Freelancing and Self-Employment* (pp. 1-14). Dublin: Senate Hall Academic Publishing.
- Castells, M. (2010). *The Rise of the Network Society* (2. Edition ed.). West-Sussex: Wiley-Blackwell.
- Dvouletý, O. (2018). Determinants of Self-employment With and Without Employees: Empirical Findings from Europe. *International Review of Entrepreneurship*, 16(3), 405-426.
- EPSC. (2016). *The Future of Work. Skills and Resilience for a World of Change*. Retrieved from http://ec.europa.eu/epsc/sites/epsc/files/strategic_note_issue_13.pdf
- Eurofound. (2017). *Exploring self-employment in the European Union*. Luxembourg: Publications Office of the European Union.
- Eurostat. (2016). Glossary: Knowledge-intensive services (KIS). Retrieved from [https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Knowledge-intensive_services_\(KIS\)](https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Knowledge-intensive_services_(KIS))
- Ferreira, J. J. M., Raposo, M. L., Fernandes, C. I., & Dejardin, M. (2016). *Knowledge Intensive Business Services and Regional Competitiveness*: Taylor & Francis.
- Frey, C. B., & Osborne, M. (2013). The Future of Employment: How susceptible are jobs to computerisation? *Working Paper Oxford Martin School, University of Oxford*, 1-72.
- Hayek, F. A. (1945). The Use of Knowledge in Society. *The American Economic Review*, 35(4), 519-530.
- Henssler, M., & Wambach, A. (2014). *The State of Liberal Professions Concerning their Functions and Relevance to European Civil Society*. Retrieved from:

- <https://www.eesc.europa.eu/sites/default/files/resources/docs/summary-en-final-glossy.pdf>
- Hughes, E. C. (1960). The Professions in Society. *The Canadian Journal of Economics and Political Science / Revue canadienne d'Economie et de Science politique*, 26(1), 54-61. doi:10.2307/138818
- Hughes, E. C. (1963). Professions. *Daedalus*, 92(4), 655-668.
- Kitching, J. (2015). Tracking UK Freelance Workforce Trends 1992-2015. In A. Burke (Ed.), *The Handbook of Research on Freelancing and Self-Employment* (pp. 15-28). Dublin: Senate Hall Academic Publishing.
- Landström, H. (2008). Entrepreneurship research: A missing link in our understanding of the knowledge economy. *Journal of Intellectual Capital*, 9(2), 301-322. doi:10.1108/14691930810870355
- Leighton, P., & Brown, D. (2013). *Future Working: The Rise of Europe's Independent Professionals (iPros)*. Retrieved from: https://freelancersweek.org/wp-content/uploads/2016/09/Future_Working_Full_Report1.pdf
- Mason, J. (2018). Entrepreneurship in knowledge-based services: Opportunity and challenges for new venture, economic, and workforce development. *Journal of Business Venturing Insights*, 10, e00092. doi:<https://doi.org/10.1016/j.jbvi.2018.e00092>
- Miles, I. D., Belousova, V., & Chichkanov, N. (2018). Knowledge intensive business services: ambiguities and continuities. *Foresight*, 20(1), 1-26. doi:10.1108/FS-10-2017-0058
- Muller, E., & Doloreux, D. (2009). What we should know about knowledge-intensive business services. *Technology in Society*, 31(1), 64-72. doi:<https://doi.org/10.1016/j.techsoc.2008.10.001>
- Muzio, D., Ackroyd, S., & Chanlat, J.-F. (2008). Introduction: Lawyers, Doctors and Business Consultants. In D. Muzio, S. Ackroyd, & J.-F. Chanlat (Eds.), *Redirections in the Study of Expert Labour: Established Professions and New Expert Occupations* (pp. 1-28). London: Palgrave Macmillan UK.
- Osnowitz, D. (2013). Freelancing. In V. Smith (Ed.), *Sociology of Work: An Encyclopedia*: SAGE Reference.
- Pedersini, R., & Coletto, D. (2010). *Self-employed workers: industrial relations and working conditions*. Retrieved from: https://www.eurofound.europa.eu/sites/default/files/ef_files/docs/comparative/tn0801018s/tn0801018s.pdf
- Rapelli, S. (2012). *European I-Pros: A Study*. Retrieved from London: [http://www.crse.co.uk/sites/default/files/European I-Pros A Study_0.pdf](http://www.crse.co.uk/sites/default/files/European_I-Pros_A_Study_0.pdf)
- Spreitzer, G. M., Cameron, L., & Garrett, L. (2017). Alternative Work Arrangements: Two Images of the New World of Work. *Annual Review of Organizational Psychology and Organizational Behavior*, 4(1), 473-499. doi:10.1146/annurev-orgpsych-032516-113332
- Susskind, R., & Susskind, D. (2015). *The Future of the Professions. How Technology Will Transform the Work of Human Experts*. Oxford: Oxford University Press.

- Windrum, P., & Tomlinson, M. (1999). Knowledge-intensive Services and International Competitiveness: A Four Country Comparison. *Technology Analysis & Strategic Management*, 11(3), 391-408. doi:10.1080/095373299107429
- Wyatt, I. D., & Hecker, D. E. (2006). *Occupational Changes During the 20th Century*. Retrieved from: <https://www.bls.gov/opub/mlr/2006/03/art3full.pdf>
- Wynn, M. T. (2016). Chameleons at large: Entrepreneurs, employees and firms - the changing context of employment relationships. *Journal of Management & Organization*, 22(6), 826-842. doi:10.1017/jmo.2016.40