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COMPENDIA: Harmonizing business ownership data across countries and over time

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ABSTRACT:

This paper presents a harmonized data set over the period 1972-2002, containing two-yearly data on the number of non-agricultural business owners and the size of the labour force for 23 OECD countries, as well as the quotient of these two variables which is called the business ownership rate of a country. The data set is called COMPENDIA, which means COMParative ENtrepreneurship Data for International Analysis. It has been constructed making use of OECD statistics as well as other relevant sources. We make an attempt to make business ownership rates comparable across countries and over time.

JEL-CODES: C82, M13, O57

KEYWORDS: cross-country data, harmonizing data, business ownership

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1. INTRODUCTION [1]

In present times there is renewed attention for the role of entrepreneurship in the economy. This is reflected by an increasing amount of research in the field of entrepreneurship. Much of this research is qualitative in nature. Far less entrepreneurship research is quantitative. In particular, there are relatively few studies which use data bases with internationally comparable figures on entrepreneurship.

Operationalizing entrepreneurship for empirical measurement is difficult (Storey, 1991). The degree of difficulty involved increases exponentially when cross-country comparisons are made. Systematic measurement conducive to cross-country comparisons is limited (Audretsch, 2003). Nevertheless, cross-country data bases on entrepreneurship are important in understanding the role of entrepreneurship in economic processes. The measure most often used to operationalize the extent of entrepreneurship in a country is the number of self-employed individuals or business owners, largely because they are measured in most countries, and measured in comprehensive ways facilitating comparisons across countries and over time (Blau, 1987). But even for this measure of entrepreneurship, cross-country comparability is a major problem. The numbers of self-employed reported in *OECD Labour Force Statistics* -one of the most important data sources on the subject- are not comparable across countries as each country supplies figures according to its own self-employment definition. In particular, the extent to which owner/managers of incorporated businesses (OMIBs) are included in the self-employment counts differs across countries. This problem is not very well-known.[2] However, in chapter 5 of *OECD Employment Outlook June 2000*,

attention is being paid to this particular subject, and an overview of self-employment definitions used in various (OECD) countries is provided.

In recent years, EIM has made an attempt to construct an international data base with self-employment figures for 23 OECD countries that are comparable across countries. The 23 countries are the 15 countries of the (old) European Union plus Iceland, Norway, Switzerland, the United States, Japan, Canada, Australia and New Zealand. The data base is called COMPENDIA (COMParative ENtrepreneurship Data for International Analysis). The data base currently contains figures for the period 1972-2002 (even years only), and is updated every two years.

To arrive at such a uniform data base, we first established the exact definition per country used in OECD Labour Force Statistics. Next, we have chosen a self-employment definition to be used in our uniform data base. In choosing a definition, we acknowledge that business ownership (self-employment) and entrepreneurship are related but not synonymous concepts. Entrepreneurship in a 'Schumpeterian sense' refers to the activity of introducing 'new combinations' of productive means in the market place. Entrepreneurship in a broad economic sense (business ownership or self-employment) means owning and managing a business, or otherwise working on one's own account. Thus, on the one hand Schumpeterian entrepreneurs are a small fraction of the business owners, while on the other hand some entrepreneurs (so-called intrapreneurs) do not work on their own account (Wennekers and Thurik, 1999).

In COMPENDIA we have chosen a strict application of the broad entrepreneurship definition given above. This involves inclusion of owner/managers of both unincorporated and incorporated businesses but exclusion of unpaid family workers. Following statistical convention, our definition also excludes so-called 'side-owners' (self-employment as a secondary activity). For countries not following the COMPENDIA definition in OECD Labour Force Statistics, we made a correction to arrive at an estimate for the number of self-employed persons according to the required definition. In the present paper, we provide explanation on the COMPENDIA data base. We describe in detail what the self-employment figures represent, how the figures were obtained and what corrections were made to the raw data. We pay special attention to the United States, as this country alone accounts for about 30% of all self-employed reported in the COMPENDIA data base.

The organization of this paper is as follows. In section 2, we discuss the self-employment (business ownership) definition used in COMPENDIA. Also, we discuss the data on self-employment published in OECD Labour Force Statistics, which form the main source for our data base. In section 3 we discuss the general method that –in principle– is used for each country to correct the raw LFS data.[3] As an illustration of the many data problems that may arise when constructing a times series on the number of business owners, section 4 discusses in detail the construction of the COMPENDIA times series for the United States. Section 5 presents the business ownership rates for the 23 countries and provides some explanation on general trends in business ownership that can be observed across countries. The final section is used for discussion.

2. DEFINITIONS AND MAIN DATA SOURCE

In this section we describe the self-employment (business ownership) definition used in COMPENDIA, *i.e.*, which groups of workers are included in the self-employment count? We also mention the sector classification used in COMPENDIA and we give a short overview of harmonization problems that have to be solved. Finally, we describe how business ownership data are scaled in COMPENDIA, to arrive at comparable figures across countries. We start this section with a description of self-employment data in OECD Labour Force Statistics.

Self-employment data in OECD Labour Force statistics.

OECD Labour Force Statistics forms the basis for our data set on the number of self-employed per country. In this annual publication, in the chapter Country Tables, for every country there is a table called 'Professional status and breakdown by activities'. In this table, total employment is divided in three professional statuses: a) employees, b) employers and persons working on own account, and c) unpaid family workers. In principle, we use the category 'employers and persons working on own account'. At all events, this category includes all *unincorporated* self-employed individuals (sole proprietors and partners). However, as far as *incorporated* self-employed are involved (owner/managers of incorporated businesses), there is a uniformity problem. In some countries they are counted as self-employed and in other countries they are counted as employee. The latter case may prevail because formally, owner/managers of incorporated businesses are employees of their own businesses. The different statistical treatment of incorporated self-employed in different

countries forms the main harmonization problem to be dealt with in COMPENDIA, and we will discuss this problem in detail in section 3.

In LFS, professional status applies to the *primary activity* of a person. For example, a person who works as an employee in some business for four days a week, and runs his own business for one day a week (*i.e.*, the person is self-employed as *secondary activity*) is counted in the a)-category rather than in the b)-category mentioned above.[4] In other words, the data in the professional status classification in LFS relate to the main job. In COMPENDIA, we follow this practice and we exclude the so-called side owners (*secondary activity*) from our self-employment count.

Which groups of workers are included in COMPENDIA?

In constructing a data set on numbers of self-employed, we have to decide which groups of workers are included in the self-employment count, and which are not. In particular, we have to deal with the following two cases: unpaid family workers and owner/managers of incorporated businesses. In some studies, these groups of workers are counted as self-employed, and in other studies they are counted as employees. As regards unpaid family workers, we consider these workers not relevant for measuring the extent of 'entrepreneurship'. These people do not own the business they work for, and thus do not bear responsibility and risk in the same way as 'real' self-employed individuals do. We exclude this group of workers from our self-employment count. As regards owner/managers of incorporated businesses, we do consider this group as highly relevant, because in an

'entrepreneurial' sense, this group is not essentially different from the unincorporated self-employed. We include the incorporated self-employed in our self-employment definition.

Which sector classification is used in COMPENDIA?

In LFS, the employment status division is applied separately for the agriculture, hunting, forestry and fishing industries on the one hand and the 'non-agricultural activities' on the other hand.[5] This two-sector classification is also used in COMPENDIA. The agricultural industries are structurally different from the rest of the economy, in that self-employment is the natural employment status in these industries. Therefore, in this paper, we concentrate on the number of self-employed in the non-agricultural industries.[6]

Summarizing we use the following self-employment (business ownership) definition in the present paper: *the total number of unincorporated and incorporated self-employed outside the agriculture, hunting, forestry and fishing industries, who carry out self-employment as their primary employment activity*. We use the terms business owners and self-employed interchangeably, to indicate that we also include owner/managers of incorporated businesses in our self-employment notion.

Harmonizing the OECD Labour Force Statistics data.

In constructing a harmonized data set for the number of business owners across countries and over time, two types of comparability problems can be identified. The *first* problem involves comparability across countries, *i.e.*, different countries using different self-employment

definitions. Having chosen a self-employment definition to be used in our data set COMPENDIA, we have to adjust the raw LFS data for those countries which use a different definition in LFS. The corrections that we apply mainly involve corrections for the numbers of incorporated self-employed in certain countries. We aim at applying the same method for each country to ensure comparability. This general method is described in section 3. The *second* problem involves comparability over time, *i.e.*, the occurrence of trend breaks in LFS. A trend break may occur if the set-up of the labour force survey in a country changes from a certain year onwards. Also changes in self-employment definitions over time or changes in industrial classifications may introduce trend breaks. These trend breaks are corrected for in COMPENDIA and the corrections are described in section 4 for the United States. For the corrections made for the remaining 22 countries we refer to Van Stel (2003).

Scaling the business ownership data.

In order to compare self-employment figures across countries in a meaningful way, some form of scaling must be applied. A common scaling variable is the size of the labour force. In COMPENDIA, the number of self-employed (business owners) in a country as a fraction of total labour force is indicated as the country's business ownership rate. Total labour force consists of employees, self-employed persons (including OMIBs), unpaid family workers, people employed by the Army and unemployed persons. Data on total labour force are also obtained from OECD Labour Force Statistics. For this variable, comparability problems of the raw LFS figures across countries and over time occur less often than for the variable self-

employment. However, in some cases, corrections were still needed, and these are described in Van Stel (2003).

3. HARMONIZING SELF-EMPLOYMENT DATA IN COMPENDIA

In this section we give a general description of the data collection and data construction of the number of business owners for the 23 countries in the data base, for the period 1972-2002. As mentioned, our business ownership definition includes unincorporated self-employed as well as owner/managers of incorporated businesses (OMIBs). We exclude the agricultural industries. In principle, we use the numbers reported in OECD Labour Force Statistics. At all events, this item includes all unincorporated self-employed. However, the extent of inclusion of OMIBs in the reported numbers varies per country, due to different set-up of labor force surveys in different countries. This involves issues as whether classification in employment status categories is done by the interviewer or by the respondent, the degree of guidance that is given by the interviewer on the term 'self-employment', the number of categories which respondents can choose from, etcetera. For details on these labour force surveys, see OECD (2000), Annex 5A.

Estimating the 1994 level of the number of OMIBs.

The countries thus differ in the extent to which OMIBs are included in the official statistics. In *OECD Employment Outlook June 2000*, p. 158, countries are categorized in five types as regards the inclusion of OMIBs in OECD Labour Force Statistics:

    1) excluding (all) OMIBs,

2) classification of OMIBs is unclear,

3) including (all) OMIBs,

4) including most OMIBs,

5) excluding most OMIBs.

Our desired definition is the third one: including (all) OMIBs. For countries not following this definition, *i.e.*, those countries which are categorized as 1), 2), 4), or 5), we make an estimation of the number of OMIBs *in 1994* using the following procedure.

Estimation procedure for European countries in COMPENDIA.

We use as the total number of business owners (unincorporated as well as incorporated self-employed) the maximum of

a) the reported number of self-employed in OECD Labour Force Statistics 1981-2001, and

b) the number of 'non-primary private enterprises' with less than 50 employees, from the data base that is constructed in the framework of *The European Observatory for SMEs: Sixth Report* (KPMG/ENSR 2000).[7] This data base is largely based on the Eurostat publication *Enterprises in Europe*, which contains harmonized information for the 18 European countries in our COMPENDIA data set on (among other variables) the number of enterprises, by industry and size-class.

We use the number of enterprises with less than 50 employees because in larger companies the manager often does not have the control. Formally, this control rests with the shareholders. A second reason for not including *all* firms in the estimated number of

business owners is that not all firms are independent. Dependent firms (subsidiary companies) by definition are not linked to self-employed individuals. By using the number of enterprises smaller than 50 employees, we do not take account of the fact that partnerships have more than one self-employed individual, and on the other hand, that individuals can have more than one corporation or that individuals can run a business as a side activity. However, the number of enterprises smaller than 50 employees should approximately equal the number of business owners, *by and large*.

The comparison is made for the year 1994. In case the number of enterprises exceeds the reported number of 'employers and persons working on own account', as reported by OECD Labour Force Statistics, we can derive a raise-factor that corrects for the number of OMIBs. *In principle*, for such countries we apply this raise-factor constantly, for the whole period 1972-2002. For those 1)-, 2)-, 4)-, or 5)-categorized countries for which the reported number of business owners in LFS exceeds the number of enterprises, we choose the number of LFS-reported business owners. Because such a country does not belong to category 3), we know that such an estimate does not include *all* OMIBs. But we also know that the number of enterprises is lower, and therefore we argue that it is likely that the vast majority of the OMIBs *is* included in the reported LFS number.

Estimation procedure for non-European countries in COMPENDIA.

For the five non-European countries in COMPENDIA, we look again at the categorization in *OECD Employment Outlook June 2000*. The above-mentioned *European Observatory for*

SMEs does not contain data on non-European countries. Therefore in case the categorization is not '3) including (all) OMIBs', we must estimate the number of OMIBs in another way. We use country-specific sources and we refer to section four (United States) and Van Stel (2003) (other countries) for a description. In all cases we apply a procedure that resembles the procedure for the European countries as closely as possible.

Expert knowledge.

For all countries in our data set it holds that we deviate from the above procedures in case we dispose of 'expert knowledge', *i.e.*, additional information from other sources. This is the case for the Netherlands, Iceland, Switzerland, and New Zealand. For the estimation of the number of OMIBs of these countries we refer to Van Stel (2003).

Is the development over time of numbers of OMIBs measured independently?

In Table I, the number of business owners including statistically non-identified OMIBs is estimated for 1994. For some countries this results in a raise-factor that corrects (for) the number of OMIBs. In principle, the raise-factor is applied constantly for the whole period 1972-2002. In a small number of countries, the implicit assumption is that the development over time of the number of incorporated self-employed (ISE; or OMIBs) equals that of the number of unincorporated self-employed (USE). This may be an implausible assumption as the development over time of the numbers of these two groups may be quite different over such a long period of time. This is not a desirable characteristic of using such a procedure.[8]

However, for the majority of countries the actual assumption that lies behind our method of estimating the number of OMIBs, is not so strong. For example, when a country is categorized as 'including most OMIBs', the development over time of 'most' OMIBs *is* included in the published numbers of OECD Labour Force Statistics. The actual assumption that we make when applying a point estimate of the raise-factor constantly for the whole period, is that the proportion of *non-identified* OMIBs in the total number of business owners stays constant over time, and this is a less strong and hence more plausible assumption. Additionally, for the United States, we use independent information on the number of OMIBs for the whole period 1972-2002. The only assumption we make here is that the quotient (employer firms)/(*self-reported* incorporated self-employed according to Current Population Survey) stays constant over the period 1972-1986 (see section 4). This is not such a strong assumption, and hence the development over time of the number of estimated OMIBs for the US may be considered reliable.

In Table I we give an overview of the results of applying the (missing) OMIBs estimation procedure described in this section. The number of enterprises is reported only when it is needed in the OMIB estimation procedure of that country. Hence, the number is not reported for countries with categorization 'including all OMIBs', or for countries where 'expert knowledge' is used. The number of enterprises is also not reported for the non-European countries. In principle, the mentioning of a raise-factor for a country in the last column of Table I implies that the factor is applied constantly for the whole period 1972-2002. However, in three cases (The Netherlands, United States and Japan), the raise-factor is mentioned for illustrational purposes only.

Insert Table I about here

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4. MEASURING BUSINESS OWNERSHIP IN THE UNITED STATES

As regards the number of self-employed individuals in the United States, many different sources report different figures. The official self-employment definition as practiced by the Bureau of the Census in its *Current Population Survey* (CPS) excludes the incorporated self-employed. The definition thus only includes the unincorporated self-employed which consist of sole proprietors and partners, see the *United States Small Business Administration* (SBA, 1997), p. 87.[9] As we also include the incorporated self-employed (ISE) in our COMPENDIA definition, we had to resort to other sources as regards the number of ISE.

The organization of this section is as follows. First, we discuss reported figures on (unincorporated) self-employed in various sources. Our estimation of the number of ISE is described in subsection 4.2. This subsection also includes a discussion on some specific measurement problems concerning ISE. Third, we present our business ownership series for the US, and we provide some explanation for the different developments over time of numbers of unincorporated and incorporated self-employed.

4.1 Unincorporated Self-Employed

The number of non-agricultural unincorporated self-employed in the United States can easily be obtained from OECD Labour Force Statistics (which are actually figures from the Current Population Survey). This number varies from 5.342 million in 1972 to 8.362 million in 2002.[10]

4.2 Incorporated Self-Employed

In the previous section we saw that obtaining the number of unincorporated self-employed persons is relatively straightforward. This is not true however for the number of incorporated self-employed, *i.e.*, the number of owner/managers of incorporated businesses. As mentioned earlier, this type of self-employment is excluded from the figures in official statistics. As a result, information on the numbers of owner/managers is hard to find. However, there are two sources which report more or less comparable figures on the subject. These are Bregger (1996) and Carolyn Looff, as reported in SBA (1997), p. 90. In SBA (1997), p. 91, it is reported that the number of incorporated self-employed (the owner/managers) increased with 40% between 1976 and 1979 and with 33.3% between 1979 and 1983. Bregger, p. 8, reports that the number of self-employed owners of incorporated businesses rose from 1.5 mln in 1976 to 2.1 mln in 1979 and to 2.8 mln in 1982. Note that these figures correspond to the 40% and 33.3% increases as reported in SBA (1997). However, it is clear from the latter source that the 33.3% increase relates to a four-year period and not to a three-year period.[11] So, we have a figure of 2.8 mln for all industries (including the agricultural sectors) in 1982 according to Bregger. In SBA (1987), p. 114, Table 4.3 -which is the same type of tabulation as the one of Carolyn Looff in SBA (1997), p. 90- a number of 2.59 million of incorporated

self-employed (ISE) in May 1983 is reported for all *non-agricultural* industries. These figures seem to match quite well. Indeed the ratio 2.59/2.8 (non-agricultural ISE/total ISE) closely resembles the corresponding ratio for 1989 that can be derived from Bregger, p. 8, Table 5. Therefore, in order to construct a series of the number of incorporated self-employed between 1976 and 1994, we use the figures for 1983, 1988 and 1994 as provided by SBA (1987), p. 114, Table 4.3 and SBA (1997), p. 90, Table 3.3 (these two tabulations are consistent) and for 1976 and 1979 we apply the 40% and 33.3% increase figures to the 1983 figure of 2.59 mln. We can even go back until 1967.[12] For 1967, Fain (1980), p. 7, reports a number of 850,000 incorporated self-employed. This figure is consistent with the figures for 1976 and 1979 reported by Bregger (1996). In order to correct for the agricultural owner/managers we again apply the relative growth rate (1.5/0.85 between 1967 and 1976, an increase of 76.4%) in order to arrive at an estimate of the number of non-agricultural incorporated self-employed in 1967. See Table II.

Insert Table II about here

Underestimation of numbers of OMIBs.

Although with help of data reported in SBA (1987 and 1997) we have been able to produce some preliminary figures for the number of owner/managers of incorporated businesses (OMIBs), it is important to note that these figures actually understate the real number of OMIBs. This is because legally, these workers are employees of their own businesses. Now,

in the labour force survey people are asked whether they are employed by a government, a private company or a nonprofit organization (in which cases they are classified as wage and salary workers) or whether they are self-employed. In the latter case, the following question is asked: "Is this business incorporated"? The people who answer 'yes' are still classified as wage and salary workers in the official statistics. It is these figures (the numbers of people who answer 'yes' on the incorporated business question) that are tabulated in SBA (1987 and 1997) and which figures we have taken over in Table II. However, not *all* incorporated self-employed are detected by the extra question. Owner/managers who answer that they are wage and salary workers (because legally this is the case) are not identified as self-employed workers because no extra question is asked to people who respond that they are employed by a private company. So the reported numbers of incorporated self-employed only relate to people who responded (erroneously, for the purposes of the labour force survey) that they are self-employed. The figures do not include the owner/managers who (correctly, for those purposes) identify themselves as wage and salary workers. These owners cannot be identified. For more details about these questionnaires, see Bregger, p. 8, SBA (1997), p. 113, and OECD (2000), Annex 5A.

So, the reported figures are actually an understatement of the real number of incorporated self-employed. However, the magnitude of the understatement is unknown, see Fain (1980), p. 7: "Another group which cannot be separated and studied are those incorporated self-employed who report themselves initially as wage and salary employees. There is no way to determine how large this group might be or to know whether it has grown larger or smaller over time". The problem of the unidentified owner/managers who report themselves as wage

and salary worker seems to prevail not only in the United States but also in other OECD countries. This is because in general, statistical definitions are based on legal employment statuses, see Hakim (1988), p. 422: "Working proprietors or managers of incorporated businesses are classified as employees in statistical surveys, because that is their status in law and for tax and social insurance purposes. However, these distinctions are not necessarily observed by respondents to the labour force surveys that provide the main source of data on self-employment, and errors cannot always be detected and corrected by statistical offices." So, because the official status of owner/managers is that of employee, labour force surveys do not bother to ask respondents who report themselves as employees whether or not they own an incorporated business. Therefore, their numbers are unknown, as Hakim (1988), p. 423, reports: "And we do not have any idea how many more working proprietors and managers of their own incorporated businesses are invisible in the statistics because they classified themselves –according to the rules– as employees of their own small firm".

While Fain (1980) and Hakim (1988) in principle report on the particular measurement problems in the United States and the United Kingdom, respectively, the problems prevail in many other (if not all) OECD countries as well. See for example OECD (1992), p. 185: "Data on the numbers of owner-managers of incorporated businesses are not widely available. In addition, their propensity to report themselves as self-employed is unknown". This implies that those owner/managers of incorporated businesses who report themselves as employee are not identified, consistent with Fain (1980) and Hakim (1988). See also OECD (2000), Annex 5A.

Correction based on number of employer firms.

Because we want to obtain a plausible estimate of the number of incorporated self-employed, and we know that the series from Table II is too low, we make a correction on these series. For this purpose we use the number of employer firms, as yearly published in the *The State of Small Business, A Report of the President*, see for example SBA (1998), p. 118, Table A9, and SBA (1999), p. 205, Table A5. The number of employer firms is a conventional estimate for the number of OMIBs. See SBA (2000), p. 5: "Incorporated self-employment is generally defined as an employer firm […]". In *The State of Small Business, A Report of the President*, the number of 'nonfarm' employer firms is published each year, both by size-class and by industry. The term 'farm' relates to agriculture in narrow sense here, i.e., excluding the industries hunting, forestry and fishing. Because we work with the broad definition of agriculture, we subtract the number of employer firms in the industry 'Agricultural services, Forestry, and Fishing' from the total number of 'nonfarm' employer firms. Next, because we try to use a method for the United States that is as uniform as possible with the method for the European countries, we take only the employer firms that are smaller than 50 employees.[13] This leads to the series in Table III below.

Insert Table III about here

As we see from Table III, the number of employer firms is measured from 1988 onwards. We have no information on the number of employer firms before that year. Therefore, for the

year 1988, we compute the ratio employer firms / incorporated self-employed according to the labour force survey (see Table II) and apply this factor to the series in Table II (for the years prior to 1988). The ratio equals 4690/2984 = 1.57. The implicit assumption is that about two third of the OMIB-respondents in the labour force survey classify themselves as self-employed while one third classify themselves as wage and salary employees. This may be plausible.[14]

4.3 Total Number of Self-Employed

Having constructed a series for the incorporated self-employed, we are now able to construct a series for the total self-employed, according to our definition (all incorporated and unincorporated self-employed but excluding the agricultural sectors, the secondary jobs and the unpaid family workers). For the unincorporated self-employed (USE) we use OECD Labour Force Statistics.[15] For the incorporated self-employed (ISE) we use the series from Table III for 1988 and later years, and the series from Table II, with the correction factor applied to it, for the years prior to 1988. For the years between 1972 and 1988 that are not reported in Table II, we interpolate. This results in the series presented in Table IV.

Insert Table IV about here

Different trends for incorporated and unincorporated business owners.

From Table IV, we see that the number of incorporated self-employed (ISE) has increased faster than the number of unincorporated self-employed (USE). For example, in the period 1980-2002, the number of ISE increased with an average of 2.3% per year. In the same period the average annual growth of the number of USE was 0.8%. Apparently, more self-employed individuals choose for incorporation of their business. Why does this occur? There can be many reasons, as Fain (1980), p. 7, reports: "The move towards incorporation is a function of many complex factors. A worker will usually incorporate his business for traditional benefits of the corporate structure, including limited liability, tax considerations, and the increased opportunity to raise capital through the sale of stocks and bonds". Simply put, when an unincorporated business expands, it becomes more attractive to incorporate the business. So, when small businesses perform well and expand, they will often choose for incorporation. In that case however, the status of the entrepreneur in the official statistics changes from self-employed to employee. See Bregger (1996), p. 8: "What undoubtedly occurs is that, as the small businesses expand and bring on employees, the owners incorporate their businesses, thereby shifting the class-of-worker classification to wage and salary employment. This type of transitional shuffling, while not readily measurable, is very likely an ongoing event […]".

From the previous paragraph, it is clear that data on USE alone can be misleading. For example, if the number of USE stays constant or decreases, one cannot tell whether this is because business ownership really decreases, or whether many small businesses have incorporated their business and as a result are not considered self-employed any more in

official statistics. The above example underlines the importance of including the owner/managers of incorporated businesses in the self-employment count.

5. BUSINESS OWNERSHIP RATES 1972-2002

In this section we present some data on (non-agricultural) business ownership from the COMPENDIA data base. The complete data base can be found at www.eim.net.[16] From Table V we see that in 2002 business ownership rates are high in Mediterranean countries, especially Greece and Italy, while they are relatively low in Scandinavian countries and Luxembourg. We also see that for the 23 OECD countries covered by the data set, there are over 44 million business owners, 46% of whom are in European countries, and 31% of whom are in the United States.

Concerning developments over time, most countries display a U-shaped pattern of initial decline, followed by an increase of the business ownership rate. The decline is not always visible from Table V because the data start only in 1972. However, in the post World War II period business ownership rates declined constantly in most Western economies. Large firms exploited economies of scale in the production of new economic and technological knowledge, leaving little room for entrepreneurship and small businesses (Schumpeter, 1950). But from the 1970s onwards times have changed and the trend towards less self-employment has reversed, starting in the United States. There are several reasons for the revival of small business and self-employment in Western economies. Notably, in many sectors, new technologies have reduced the necessity of scale economies to arrive at

competitive advantages (Meijaard, 2001). Developments like globalization, the ICT-revolution and the increased role of knowledge in the production process have led to increased dynamics and uncertainty in the world economy from the 1970s onwards. In turn, these developments have created room for (groups of) small firms to act as agents of change (Audretsch and Thurik, 2000). The bigger role in technological development for small and new firms is referred to by Audretsch and Thurik (2004) as a regime switch from the 'managed' to the 'entrepreneurial' economy.[17]

Insert Table V about here

Many Western countries have experienced a shift from the 'managed' to the 'entrepreneurial' economy. However, the extent and timing of this shift has not been identical across countries (Audretsch *et al.*, 2002). The first country to experience the transition from the 'managed' to the 'entrepreneurial' economy was the United States (Verheul *et al.*, 2002). Indeed, from Table V it can be seen that the United States has the highest increase in business ownership rate between 1972 and 1980. The different extent and timing of the shift across countries is further illustrated by Figure I, where the development of the business ownership rate is depicted for the United States, the United Kingdom, France and Germany. As mentioned, the upswing in business ownership was first experienced by the United States in the 1970s. The United Kingdom followed in the 1980s. Still later, Germany follows. France however, has had a constantly decreasing business ownership rate.

Institutions and policies of countries play a role in the different extent and timing of the shift across countries. For instance, the steep increase in business ownership in the United Kingdom in the 1980s was stimulated by government policy aiming at maximising the number of new-firm startups in an attempt to fight unemployment (Van Stel and Storey, 2004). In the 1990s however, UK policy changed towards a focus on incumbent businesses with 'growth potential', which may explain the leveling off of the business ownership rate in the 1990s.[18] The constant decrease in France may be due to French policy, which for a long time focussed on large businesses, for instance by giving the majority of their orders to large businesses. Also, high tax burdens on SMEs and a discrepancy in social security between wage- and self-employed people create few incentives for entrepreneurship. A negative cultural attitude towards entrepreneurship probably also plays a role (Henriquez *et al.*, 2002).

Insert Figure I about here

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6. DISCUSSION

In this report we presented the data set COMPENDIA. The data set contains harmonized information on numbers of business owners and the size of the labour force, for 23 OECD countries over the period 1972-2002. The quotient of these two variables is called the business ownership rate. These harmonized data are helpful for conducting quantitative

research on entrepreneurship at the macro level. Our primary data source is *OECD Labour Force Statistics* and in COMPENDIA we have made an attempt to make business ownership rates comparable across countries and over time. The main problem in harmonizing business ownership data is the different statistical treatment of the incorporated self-employed, as this category of workers is classified as wage-and-salary workers in some countries, and as self-employed workers in other countries. We have chosen our business ownership definition to include the unincorporated *and* the incorporated self-employed, because both categories run their own businesses. Concerning self-employment definitions being in force in different countries, we based ourselves on the definitions reported in *OECD Employment Outlook June 2000*. Next, for countries not including *all* owner/managers of incorporated businesses in their self-employment count, we made corrections based on numbers of enterprises from *The European Observatory for SMEs: Sixth Report*, or, for some countries, specific information from national sources.

In making these corrections, we tried to approximate the (unknown) real numbers of business owners as closely as possible. Of course, the quality of the approximations depends on the plausibility of the corrections applied. In this respect, we should mention some limitations of our data set. *First*, for many countries, we apply a constant correction factor for OMIBs (computed in 1994) to the whole period 1972-2002. This is not ideal as, in reality, the number of OMIBs in proportion to the number of unincorporated self-employed may change over time. In many cases this drawback is however mitigated because our correction only relates to a smaller number of non-identified OMIBs. *Second*, for many countries, our correction factor for numbers of OMIBs is based on enterprise data, not on employment (*i.e.*,

person-based) data. It is well-known that there are many difficulties in relating these two kinds of data sources. *Third*, for some countries little information on numbers of non-agricultural self-employed was available in OECD Labour Force Statistics, forcing us to use rather crude approximation methods. This holds especially for Switzerland and, prior to 1986, for New Zealand (see Van Stel, 2003, for details). Despite these limitations we think that COMPENDIA provides the most reliable, comparative data set available today, regarding business ownership across industrialized countries and over time.

For harmonizing business ownership data across countries and over time, the ideal situation would be to use actual data on numbers of incorporated self-employed (as for some countries is already done in COMPENDIA 2002.1), but for many countries these numbers cannot be identified from the domestic labour force surveys being in force. For these countries, corrections based on numbers of enterprises are the best approximation possible. Nevertheless, in order to improve cross-country comparability of business ownership data, future research should concentrate on collecting actual data on numbers of incorporated self-employed. If not available from labour force surveys, such data may be obtained from other national sources like tax return data.

NOTES

[1] Wim Verhoeven and Sander Wennekers provided helpful comments on an earlier draft.

[2] For instance, during a panel discussion of policy makers at the "First GEM Research Conference" (Berlin, April 2004), participants expressed their surprise because –contrary to what is commonly believed– Germany had relatively more self-employed individuals than the United States, according to OECD statistics. However, this can be explained by the fact that for Germany, OMIBs are included in the OECD self-employment count, whereas for the US, they are excluded. Hence the data are not comparable between the two countries.

[3] In the remainder of this paper the full name 'OECD Labour Force Statistics' and the abbreviation 'LFS' will be used interchangeably.

[4] The minimum weekly amount of time that a person has to work in order to be included in the (self-) employment count of LFS is one hour (OECD 2002, pp. xi-xii).

[5] The 'agricultural industries' are thus defined to include agriculture, hunting, forestry and fishing.

[6] The number of self-employed in agriculture, hunting, forestry and fishing as well as the number of non-agricultural self-employed can be found at www.eim.net.

[7] The term 'non-primary' is defined to exclude agriculture, hunting, forestry and fishing.

[8] Note that for countries where the 1994 number of business owners in LFS exceeds the number of enterprises smaller than 50 employees, *i.e.*, countries that use the reported LFS numbers, the development over time of the number of ISE *is* measured independently of the development of the number of USE.

[9] People who are self-employed as a secondary activity (side owners) are also not included in the Census definition, see SBA (1997), p. 87.

[10] Some sources, such as Bregger (1996), p. 4, Table 1, and SBA (1997), p. 90, Table 3.3 report slightly different figures for the number of non-agricultural self-employed. However, as it turns out, these differences relate to the definition of agriculture, i.e. whether or not the industries hunting, forestry and fishing are included in the sector 'agriculture' (as is the case in LFS). See Van Stel (2003) for details.

[11] The 33.3% increase actually relates to the period 1978-82 instead of 1979-83, and to *all* industries, see SBA (1987), p. 112, Table 4.2. Because the period analysed in that table is 1979-83, the relative changes were assumed equal for the two periods.

[12] From 1967 on, because of a change in the Current Population Survey in that year, it is possible to identify those workers who report themselves as self-employed but have incorporated their business. Before 1967, these workers could not be identified separately from other self-employed individuals. See Bregger (1996), p. 4, and Fain (1980), p. 7.

[13] For this purpose the number of firms with employment size between 19 and 50 is approximated at 75% of the firms with size between 19 and 100.

[14] In a description of labour force surveys in different countries, OECD (2000), p. 192, states that "It is assumed that when the procedure is self-assessment alone, OMIBs will mainly classify themselves as self-employed".

[15] We use LFS versions 1981-2001 and 1970-1990. For 1990 and 1992, we have used LFS 1974-1994, in order to take account of two (minor) trend breaks in 1990 and 1994 in LFS 1981-2001.

[16] The data base also contains data on the number of business owners in agriculture, as well as data on total labour force, employment and unemployment, real gross domestic product per capita, and the share of women in the labour force. All variables are available for the 23 countries from 1972 onwards.

[17] There are also other reasons for the revival of entrepreneurship such as an increased consumer demand for variety and the increased employment share of services in modern economies. See Carree *et al.* (2002) for an overview.

[18] In the United States the leveling off may be due to shake out of industries that are in a more advanced stage than elsewhere in modern OECD countries (Audretsch and Thurik, 2004).

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TABLE I   Estimating the number of business owners including all OMIBs in 1994 for 23 OECD countries (all numbers expressed in thousands) [1]

Country	OMIB-categorization in OECD Employment Outlook June 2000	**1.** Number of business owners in OECD LFS 1981-2001	**2.** Number of enterprises smaller than 50 employees	**3. Number of business owners (1994) used in COMPENDIA 2002.1**	Raise-factor OMIBs (3./1.; only if 3.>1.)
Austria	unclear	230	281	**281**	1.22
Belgium	**incl. all**	498		**498**	
Denmark	incl. most	161	164	**164**	1.02
Finland	incl. most	193	167	**194**	
France	incl. most	1817 [3]	2293	**2293**	1.26
Germany	incl. most	2938	3070	**3070**	1.04
Greece	incl. most	840	555	**840**	
Ireland	incl. most	145	72	**162**	
Italy	unclear	4117 [3]	3681	**4117**	
Luxembourg	unclear	11.8 [4]	13	**13**	1.10
Netherlands [2]	incl. most	596		**699**	1.17 [6]
Portugal	unclear	736	600	**736**	
Spain	**incl. all**	2052		**2052**	
Sweden	incl. most	340	335	**340**	
United Kingdom	incl. most	3002 [3]	3136	**3170**	1.04
Iceland [2]	unclear	18.1		**18.1**	
Norway	excl. most	116	168	**168**	1.45
Switzerland [2]	N.A.	N.A.		**292**	
United States	excl. all	8955		**13929**	1.56 [6]
Japan	excl. all	6130		**6950**	1.13 [6]
Canada	**incl. all**	1804 [5]		**1804**	
Australia	excl. all	984		**1493**	1.52
New Zealand [2]	unclear	226		**226**	

[1] Data on number of enterprises taken from *The European Observatory for SMEs: Sixth Report*; estimation of OMIBs for non-European countries based on country-specific sources. Finland and Ireland: 1994 number of business owners in COMPENDIA 2002.1 adjusted for post-1994 trend breaks.
[2] Expert knowledge: estimation of number of OMIBs deviates from usual procedure.
[3] OECD Labour Force Statistics, version 1978-1998. UK: raise-factor for COMPENDIA 2000.1 (1.04) has been applied to revised 1994 figure (3035, from LFS 1981-2001).
[4] Including unpaid family workers.
[5] OECD Employment Outlook June 2000.
[6] Raise-factor not used to construct the data, and only mentioned for purpose of illustration.

TABLE II

Incorporated self-employed (non-agricultural), 1967-94, preliminary times series

Year	Number (x 1000)	Source / method
1967	786	increase 76.4% 1967-76, reported by Fain (1980)
1976	1388	increase 40.0% 1976-79, reported by SBA (1987), p. 112
1979	1943	increase 33.3% 1979-83, reported by SBA (1987), p. 112
1983	2590	SBA (1987), p. 114
1988	2984	SBA (1997), p. 90
1994	3955	SBA (1997), p. 90

Source: Own calculations, based on SBA.

TABLE III

Estimated number of incorporated self-employed (non-agricultural) in US, 1988-2002,

based on number of employer firms (x 1000)

Year	Estimated number of incorporated self-employed (x 1000)
1988	4690
1990	4789
1992	4808
1994	4974
1996	5157
1998	5408
2000	5528
2002	5472

Source: Own calculations, based on SBA (1998), p. 118, Table A9 (years 1988-94);

SBA (2000), p. A-2, Table 1.2 (years 1996-98); SBA (2001), p. A-3, Table 2 (year 2000);

and SBA (2003), p. 12, Table 2 (year 2002).

TABLE IV

Total number of US non-agricultural self-employed, 1972-2002 (x 1000)

	1972	1980	1988	1994	2002
USE (OECD LFS)	5342	6956	8474	8955	8362
ISE, uncorrected (see Table II)	1120	2104			
ISE, corrected (see Table III for 1988-2002, and apply factor 1.57 for period 1972-86)	1761	3308	4690	4974	5472
Total self-employed	7103	10264	13164	13929	13834
Labour force (OECD LFS)	88847	108544	123378	132474	146054
Business ownership rate	0.080	0.095	0.107	0.105	0.095

Source: Own calculations.

TABLE V   Business ownership rates in 23 OECD countries, 1972-2002

|	1972	1980	1988	1996	2002	Share 2002
Austria	0.093	0.073	0.069	0.074	0.083	0.007
Belgium	0.105	0.098	0.109	0.119	0.113	0.011
Denmark	0.082	0.074	0.056	0.064	0.067	0.004
Finland	0.066	0.064	0.076	0.080	0.079	0.005
France	0.113	0.101	0.099	0.088	0.081	0.049
Germany (West)	0.076	0.066	0.070	0.082	0.086	0.078
Greece	0.161	0.182	0.186	0.197	0.193	0.019
Ireland	0.077	0.086	0.101	0.112	0.112	0.005
Italy	0.143	0.148	0.169	0.183	0.183	0.100
Luxembourg	0.107	0.087	0.075	0.067	0.054	0.000
The Netherlands	0.100	0.085	0.082	0.102	0.108	0.020
Portugal	0.113	0.119	0.116	0.156	0.137	0.016
Spain	0.118	0.110	0.123	0.130	0.129	0.053
Sweden	0.074	0.070	0.064	0.081	0.081	0.008
United Kingdom	0.078	0.074	0.101	0.111	0.107	0.072
Iceland	0.111	0.088	0.101	0.130	0.123	0.000
Norway	0.097	0.084	0.084	0.071	0.065	0.003
Switzerland	0.066	0.065	0.071	0.085	0.076	0.007
Europe-18	**0.100**	**0.095**	**0.105**	**0.112**	**0.110**	**0.460**
United States	0.080	0.095	0.107	0.104	0.095	0.312
Japan	0.125	0.131	0.123	0.101	0.092	0.139
Canada	0.079	0.087	0.106	0.128	0.122	0.047
Australia	0.126	0.168	0.164	0.155	0.164	0.037
New Zealand	0.106	0.090	0.114	0.139	0.135	0.006
23 Countries	**0.098**	**0.102**	**0.110**	**0.109**	**0.104**	**1.000**
Total number of business owners (x 1000)	**29401**	**34342**	**40666**	**44206**	**44342**	

Source: COMPENDIA 2002.1.

Business ownership rates refer to the number of non-agricultural self-employed (unincorporated as well as incorporated) as a fraction of the labour force.

Germany refers to West-Germany until 1991.

FIGURE I

Development in business ownership in four OECD countries, 1972-2002
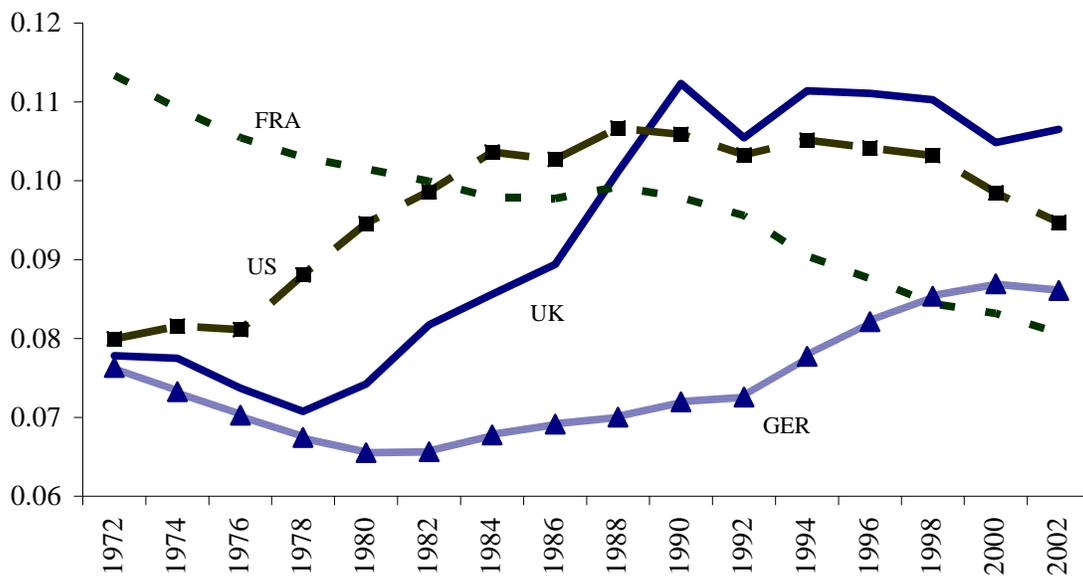
Source: COMPENDIA 2002.1.

Germany refers to West-Germany until 1991.