

Chances and Perils: On the Greek Debt Crisis, Self-Employment in Germany, and German-Chinese Economic Relations



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Greek Economy Needs Growth Strategy

by Karl Brenke

Greece has been living beyond its means for a long time now and has accumulated foreign debt. The high level of national debt is merely a reflection of the problems; the actual cause is insufficient economic power. The top-priority political objective is to strengthen the substance of the economy—in particular, the export base—to such an extent that in future, the balance of payments is at least equalized. This means Greece needs a growth strategy to catch-up industrialization.

So far, revenue in the economic exchange with other countries has been mainly generated by tourism. However, this pillar is far from sufficient; although there are growth prospects in tourism in southern Europe, these should not be overestimated. On the other hand, Greece's industrial base is only small and heavily biased towards the domestic market. Its production structure and foreign trade links for goods show that the Greek economy presents virtually no competition for developed industrialized nations. Consequently, contrary to claims, the wage restraint in Germany has not put the Greek economy under significant pressure, either. The manufacturing sector and large sections of the economy are to a large extent marked by small-scale production. Overall, in Greece, there is one self-employed worker for every two employees; the employment structure more typical of a transition economy.

Although national bankruptcy has not been officially declared, the Greek state is effectively insolvent and has no means of refinancing on the capital market. In 2010, the debt accumulated by the state (including social security payments) reached almost 329 billion euros; this amount corresponds to 145 percent of the GDP.¹ The level of debt has continued to grow rapidly over the last year; the Greek government currently estimates the new debt for 2011 at 21.6 billion euros, which is almost ten percent of economic performance.²

Whether or not it ends in bankruptcy depends, however, not on the amount of debt but on the trustworthiness and the solvency of the debtor. For instance, Japan has a much higher level of debt than Greece (amounting to around 200 percent of its GDP), but can still finance additional debts and maturing loans at very low interest rates—even after the major earthquake, which had led to lower tax revenue and higher government expenditure to remedy the damage.³ Consequently, the creditors, Japanese citizens in the vast majority of cases, attribute an extremely high creditworthiness to the debtor.⁴ Creditors therefore have confidence that the state will pay them the interest accrued and settle its debt by the agreed date.

The picture is very different for Greece. When it became clear in fall 2009 that public borrowing was much higher than previously indicated, yields on Greek government bonds climbed considerably. As of spring 2010, financing problems escalated. Contrary to claims by politicians, this development was not due to speculation on the financial markets, but to the loss of investor confi-

¹ Hellenic Statistical Authority, press release, October 27, 2011, preliminary data.

² Hellenic Republic Ministry of Finance, press release, January 12, 2012.

³ At the time of the earthquake, the ten-year yield on Japanese government bonds was at around 1.3 percent and it is currently one percent.

⁴ W.R. Lam and K. Tokuoka, „Assessing the Risks to the Japanese Government Bond (JGB) Market,” IMF Working Paper, no. 292 (2001).

dence in Greece's creditworthiness.⁵ Even financial assistance provided by other countries in the eurozone and by the International Monetary Fund (IMF) could only facilitate a short-term reduction of the high interest rates. Bond purchases by the European Central Bank (ECB) also had no lasting effect. And the hope shared by many politicians in May 2010, when the first bailout package was introduced that Greece would quickly be able to re-finance itself on the bond markets was not fulfilled. It was also for this reason that the eurozone countries in July 2011 adopted a second recovery package. Because the solutions decided upon were considered to be inadequate, this led to further negotiations in October 2011. Financial institutions and the Greek government have just decided on a debt cut, meaning that private creditors "voluntarily" write off at least half of their loans to Greece.⁶ The national debt could thus be reduced by around 100 billion euros. The majority of the remaining debt would then be distributed among international institutions and, thus, indirectly, other countries. This share will continue to grow since Greece will receive further financial assistance of 100 billion euros up until 2014, plus another 30 billion euros to cover private creditors for the planned debt cut.⁷ Even if forecasts made as part of the most recent recovery measures prove to be right, the country is still expected to have a debt burden of 120 percent of its GDP in the year 2020.

Lost Confidence in Economic Performance

As far as both EU and German politicians are concerned, the financial problems of Greece and some other states in the eurozone are seen as a public debt crisis. If this were the case, however, that would mean, for example, Japan has been insolvent for a long time now. Apparently, sufficient economic potential is attributed to this country to repay the debt. This is hardly surprising because up until 2011, Japan consistently generated foreign trade surpluses and consequently was not dependent on capital from abroad. Greece's capacity, on the other hand, is deemed to be insufficient by potential financial backers. We are not just dealing with a public debt crisis, but, more importantly, the country's economic power is considered to be so weak that it cannot carry its debt burden.

⁵ M.G. Arghyroua and A. Ktonikassb, „The EMU sovereign-debt crisis: Fundamentals, expectations and contagion. European Economy," Economic Papers, no. 436 (2011).

⁶ At the euro summit of 26 October 2011, bank representatives agreed in principle to write off approx. half of the debt. The banks represented at the relevant negotiations cannot speak for all private creditors, however.

⁷ Decision of the European Council of October 2011, Brussels, October 26, 2011.

Therefore, proposed solutions aiming only at countries such as Greece reducing their public expenditure and increasing their government revenue are not far-reaching enough. These may even prevent the country from achieving its objective—long-term consolidation of public budgets. As experience with the government austerity measures already introduced in Greece shows, they have considerable negative repercussions for the economic cycle and lead to reduced revenue and increased public sector expenditure, for instance, for social security benefits. Thus, the situation regarding public budgets deteriorated again in 2011.⁸ An austerity policy cannot serve to strengthen the economic base—on the contrary.

Surprisingly, this aspect is largely ignored in the debate surrounding the euro crisis and, apart from some economically adventurous ideas,⁹ only vague structural reforms¹⁰ are said to be necessary in order to strengthen the economic base. Or there is a call for money from the European Structural Funds and other special funds to be concentrated on crisis countries such as Greece¹¹—it remains unclear exactly which countries these are, what this is meant to achieve, and how other beneficiaries will react towards this.

In the following analysis, the economic development of the past decade and fundamental structures of the Greek economy will be outlined so as to identify weaknesses and find indications of whether, under the given circumstances, there are in fact any starting points at all for significantly strengthening the economic base in the foreseeable future. The main source of statistics

⁸ International Monetary Fund, Greece: Fifth Review Under the Stand-By Arrangement, Rephasing and Request for Waivers of Nonobservance of Performance Criteria. 2011; Press Release on the Executive. IMF Country Report, no. 11/351, 7f. Board Discussion and Statement by the Executive Director for Greece.

⁹ One example of this is the „Helios" project proposed by the Greek Ministry of the Environment, Energy and Climate Change and also supported by the faction in the German Bundestag of Alliance 90/the Greens (paper no. 17/7098 of the German Bundestag). Solar power production in Greece is to be developed but it will have to be subsidized, too. This is something we know from the examples of Italy and Spain where the development of power production through solar energy facilities has required financial backing. Greece does not have the resources to heavily subsidize ongoing production.

¹⁰ Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung: Verantwortung für Europa wahrnehmen. Jahresgutachten 2011/12, Wiesbaden: 2011.

¹¹ G.A. Horn, F. Lindner, and T. Niechoj, (2011): Schuldenschnitt für Griechenland – ein gefährlicher Irrweg für den Euroraum. IMK-Report no. 63, 16.

used is the Eurostat database—drawing on the most up-to-date information available here.¹²

Low Per Capita Output

Greece joined the eurozone in 2001. The state has 11.3 million inhabitants—slightly more than Baden-Württemberg (10.7 million). The per capita economic output in 2010 was 20,100 euros, in 2008—that is, before the onset of the crisis—it was 20,700 euros. This is less than in Mecklenburg-Vorpommern (2010: 21,700), the German federal state showing the weakest economic performance. Regarding economic output per person employed, Greece has fared better and, at around 48,000 euros, exceeded the average of the eastern German federal states (46,000 euros) in 2010, but lagged significantly behind western Germany (57,400 euros). Participation in the labor market is correspondingly relatively low: in Greece, persons aged between 15 and 64, only accounted for a share of just under 60 percent in 2010, in the EU as a whole and in Germany, it was 77 percent (western Germany: 76 percent; eastern Germany: 80 percent).¹³

The Road to Crisis ...

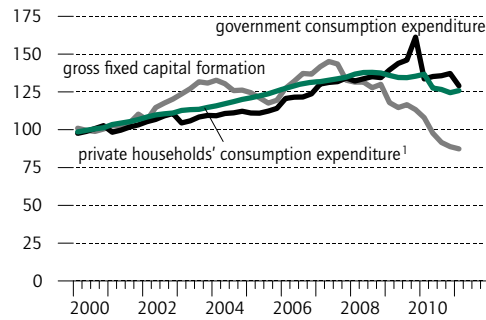
Over the past decade, economic performance in Greece rose dramatically. According to Eurostat, from 2000 to 2008, the real GDP increased by almost a third overall, growth in the EU as a whole was at one sixth, and in the eurozone at one seventh. In 2009 and 2010, however, the price-adjusted value added decreased by a good 3.3 and 3.5 percent, respectively. A fall of 5.5 percent is anticipated for 2011. The decline beginning in early 2009 was initially the result of the global financial crisis, then further exacerbated by Greece's specific problems.

There was a strong and steady increase of private expenditure up until 2008, and then it fell dramatically (Figure 1). There was a similar development with public expenditure: but here, there was no drop until early 2010—after the expansion had even accelerated in the previous

Figure 1

Consumption and Investment in Greece

Index 2000 = 100, chained volumes



¹ Including nonprofit organizations serving households.
Source: Eurostat, calculations by DIW Berlin.

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There was rapid growth in consumption until the crisis.

year. Before disclosure of the actual budget crisis, expenditure was still visibly increasing dramatically. Up until early 2004, investments increased more rapidly than economic performance, which may well have been not least because of expenditure on the Olympic Games.¹⁴ Despite a favorable economic situation, this was followed by flagging investment activity, which recovered as of summer 2005, but cooled off again only two years later. The development was driven by interest rates which were very low due to inflation (Figure 2).

... Was Paved with Massive Foreign Trade Deficits

The primarily consumer-driven expansion was accompanied by an enormous increase in goods imports (Figure 3). Although goods exports, starting from a significantly lower level, also rose, growth lagged significantly behind that of imports. The decline in consumption was then followed by a sharp downturn in goods imports, which continues today due to constantly shrinking domestic demand. Exports also fell temporarily—but not to the same extent. From the end of 2009 to the first quarter

¹² Particularly in the case of Greece, some of the data presented are accompanied by a note that they are based on estimates or that the information is to be considered to be preliminary. In other words, there is still uncertainty as to the reliability of some of the information. Naturally, the shadow economy is completely inadequately captured by the official statistics. This is much more significant in Greece than in most European countries. Schneider, F. „Size and Development of the Shadow Economy of 31 European Countries from 2003 to 2010,” published manuscript, 2010: www.econ.jku.at/members/Schneider/files/publications/LatestResearch2010/ShadEcEurope31_Sept2010_RevisedVersion.pdf.

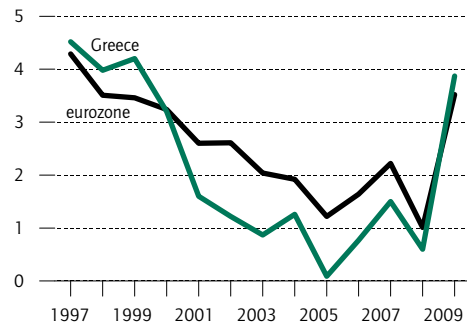
¹³ Data source for Greece: Eurostat. For Germany: Working Group on Regional Accounts and the Microcensus on Labour Force Participation.

¹⁴ The overall cost of the 2004 Olympic Games in Athens and other venues was just under nine billion euros, according to a statement of the former Greek Finance Minister George Alogoskoufis, that was provided by the Greek Embassy in Germany. It is not known how much of this is accounted for by investment—however, based on past experience with comparable major sporting events, this must be where the majority of funding came from. As a comparison, in 2003, Greece's total gross fixed capital formation was 40 billion euros.

Figure 2

Real Interest Rates¹ in Greece and the Eurozone

In percent



1 Ten-year yield on government bonds less the price increase according to the EU harmonized consumer price index.

Source: Eurostat, calculations by DIW Berlin

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Real interest rates in Greece were zero at times.

of 2011, the quarter for which the latest data is currently available, they have more or less stabilized.

The opposite pattern emerges for services. Up until 2008, exports were able to increase at a greater rate than imports, but then, here, too, the financial crisis had a dampening effect. As regards the export of services, which are more significant than export of goods, these are primarily services provided by the tourist industry in Greece because visitors from abroad bring money into the country. From the end of 2009 onwards, both exports and imports stagnated. Therefore, as far as trade in services is concerned, there are no serious consequences of the crisis to be seen to date in Greece.

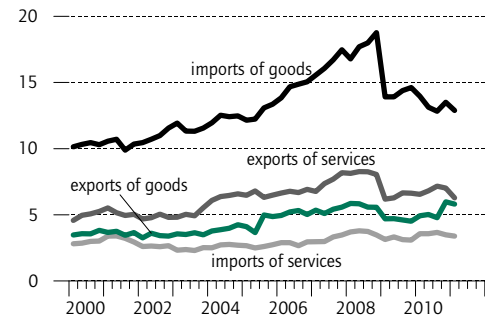
In the exchange of services, thanks to its tourist industry, Greece was able to record a surplus throughout the whole of the last decade, but this was far from sufficient to compensate for the enormous deficit in the trade in goods. According to Eurostat data, in the period from 2000 to 2010, the foreign trade deficit for goods and services amounted in total to one eighth of the GDP on average. In 2008, that is, before the crisis, it was even one seventh. By now, the deficit is falling because of the strong decline in goods imports; in the first quarter of 2011, the foreign trade deficit was still eight percent of the GDP.

The high foreign trade deficit was and is reflected in a high consumption ratio—that is, the share of private and public spending as a percentage of the GDP. Through-

Figure 3

Greek Foreign Trade

In billion euros at current prices



Source: Eurostat, calculations by DIW Berlin.

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Growth of imported goods was strong until the crisis.

hout the last decade, it was around 90 percent. No other country in the EU attained such a high value: all states in the Community reached just under 80 percent, with a slight increase recently. The countries in the eurozone were slightly below this value.

Strengthening of Export Base Essential

The key to emerging from the crisis is to reduce external imbalances by improving economic performance. A strategy aiming at import substitution, in other words, replacing foreign imports with domestic production, can only have limited success, however. Experience with such development plans as attempted, for instance, in South America from 1930 to 1980 has, for various reasons not to be discussed here, been disappointing.¹⁵ In the case of Greece, the prerequisites needed for such a strategy (in particular, an autonomous monetary and a foreign trade policy) are not in place. Moreover, the plan has become questionable in view of increasing international division of labor.¹⁶ Therefore, the only option left is to strengthen the export base.

The extent of the export activity capacity of an economy is dependent on a number of factors: its production

¹⁵ L. Hoffmann, *Imports substitution und wirtschaftliches Wachstum in Entwicklungsländern*. Tübingen: 1970; Boris, D. *Zur Politischen Ökonomie Lateinamerikas. Der Kontinent in der Weltwirtschaft des 20. Jahrhunderts*. Hamburg: 2001.

¹⁶ J. Bhagwati, *In Defense of Globalization*. Oxford: 2004.

structure and thus the range of goods it can supply, its geographical proximity to significant sales markets, and also its size. Consequently, companies in big countries are less reliant on export trade than providers in small countries, thanks to their receptive domestic market. Accordingly, the empirical evidence shows a negative correlation within the EU between the size of a country (measured by the population) and the value of exports in goods and services in relation to the GDP (Figure 4). There are two notable exceptions—on the one hand, Germany, which has very high exports, given its size, and on the other hand, Greece, which has relatively low exports. Greece also has the lowest export rate of all the EU states.

Detailed information about the foreign trade position of Greece is available for the movement of goods. For all the product groups identified, imports were higher than exports (Table 1). It is not surprising that as a country poor in raw materials, Greece has a foreign trade deficit for fossil fuels (i.e., oil, gas, coal). However, its position concerning mechanical engineering products and vehicles is also very weak—imports in 2010 were six times higher than exports, and this disparity was even greater in previous years. The discrepancies for chemical products were significant, but not quite so great—mainly because very little was imported. The situation looks better for other manufactured goods (not further specified) which, however, only constitute a very small share of foreign trade. Greece is relatively strong in export of

comestible goods, but even here, the country shows a deficit—even in trade with countries in the EU and with Germany.¹⁷ This is remarkable, since agriculture plays a relatively major role in Greece (Table 2).

The export base of an economy or region is made up of economic activities through which goods that can be traded between regions or countries are produced and sale of these brings in income from other areas. Such activities generally include, in particular, extraction of certain raw materials, a number of sectors of manufacturing, including processing of agricultural products, some business services and tourism. The statistics available make no distinction whether the goods produced are tradable or not internationally tradable. Nevertheless, information about the production structure can be deduced from the data.

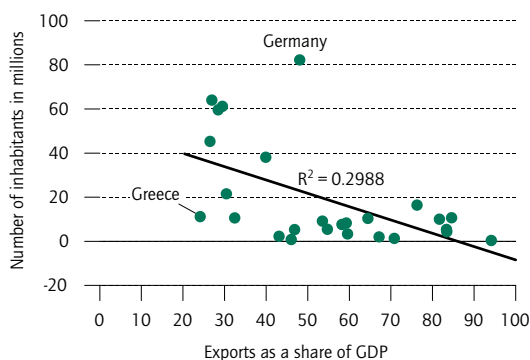
Weak Industrial Base with Strong Domestic Market Bias

Manufacturing only plays a minor role in the Greek economy. In 2012, the entire manufacturing industry only generated one tenth of the country's value added. Only the small island state of Cyprus has an even lower figure, and only in countries such as the UK and France, which underwent significant deindustrialization, does the manufacturing industry produce the same share as in Greece.¹⁸ The total Gross Value Added (GVA) of the Greek manufacturing industry is only marginally higher than the combined figure for the German federal states of Thuringia and Saxony-Anhalt. In 2010, industry value added was 1,800 euros per capita which was lower than in the German federal state of Mecklenburg-Vorpommern (2,000 euros).¹⁹

Within the manufacturing industry, production is relatively highly concentrated on a small number of products. The production of comestible goods alone generates a third of the total net value (Table 3). Wood processing, paper production and printing works are equally significant, as is the production of plastic, glass, and ceramic goods. However, these are all basic goods, which

Figure 4

Export Rates and Population in EU Member States¹ in 2010



1 Excluding Luxembourg.

Source: Eurostat, calculations by DIW Berlin.

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The larger the country, the lower the export rate measured against economic output—Greece bucks this trend.

¹⁷ According to Eurostat, Greece recorded exports of 2.6 billion euros and imports of 4.6 billion euros for agricultural products in trade with other EU states in 2010. According to the German Federal Statistical Office, there was also a trade deficit with Germany amounting to 200 million euros in the same year. German exports of agricultural products to Greece were about a third higher than imports.

¹⁸ On the deindustrialization of France, see M.A. Chatillon (rapporteur), „Rapport D’information fait au nom de la mission commune d’information (1) sur la désindustrialisation des territoires,” Ordinary Session of the Senate, 2010–2011, no. 408 (2011).

¹⁹ Sources of data for Greece: Eurostat and for Germany: Working Group on Regional Accounts.

Table 1

Greek Foreign Trade by Product Groups

In million euros

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Exports											
Comestible goods, tobacco	2 487	2 856	2 321	2 290	2 247	2 602	2 836	3 045	3 452	3 451	3 591
Raw materials	1 015	1 019	791	983	848	1 022	1 420	1 129	1 145	1 012	1 236
Fossil fuels, lubricants	1 751	1 281	924	753	865	1 322	2 171	2 105	2 056	1 363	1 809
Chemical products	1 030	1 145	1 075	1 469	1 637	2 029	2 177	2 365	2 340	2 107	2 364
Other manufactured goods	4 847	4 833	4 308	4 566	4 737	4 784	5 380	5 678	5 988	4 451	4 877
Mechanical engineering products, vehicles	1 592	1 536	1 440	1 542	1 666	1 768	2 092	2 291	2 474	2 016	1 938
Unassigned goods	1	179	154	229	306	360	450	591	481	275	465
Total	12 723	12 848	11 013	11 830	12 306	13 888	16 525	17 204	17 937	14 675	16 280
Imports											
Comestible goods, tobacco	3 880	4 096	4 066	4 273	4 541	4 662	5 134	5 749	6 151	5 726	5 534
Raw materials	893	1 025	1 054	1 073	1 194	1 234	1 395	1 817	2 002	1 240	1 420
Fossil fuels, lubricants	4 398	5 076	4 522	5 437	5 383	7 888	9 713	9 915	13 475	8 382	11 543
Chemical products	4 215	4 550	3 655	5 018	5 721	6 356	6 924	7 744	8 414	7 741	7 286
Other manufactured goods	9 783	10 030	8 955	9 820	10 914	11 049	12 963	15 089	16 097	11 823	10 700
Mechanical engineering products, vehicles	12 992	12 017	11 072	13 984	14 618	12 502	14 375	16 548	16 693	14 838	11 538
Unassigned goods	89	74	63	45	42	66	164	441	114	40	34
Total	36 249	36 868	33 387	39 650	42 415	43 755	50 668	57 302	62 945	49 791	48 055
Balance											
Comestible goods, tobacco	-1 393	-1 240	-1 745	-1 983	-2 294	-2 060	-2 298	-2 704	-2 699	-2 275	-1 943
Raw materials	122	-6	-263	-90	-346	-212	25	-688	-857	-228	-184
Fossil fuels, lubricants	-2 647	-3 795	-3 598	-4 684	-4 518	-6 566	-7 542	-7 810	-11 419	-7 019	-9 734
Chemical products	-3 185	-3 405	-2 580	-3 549	-4 084	-4 327	-4 747	-5 379	-6 074	-5 634	-4 922
Other manufactured goods	-4 936	-5 197	-4 647	-5 254	-6 177	-6 265	-7 583	-9 411	-10 109	-7 372	-5 823
Mechanical engineering products, vehicles	-11 400	-10 481	-9 632	-12 442	-12 952	-10 734	-12 283	-14 257	-14 219	-12 822	-9 600
Unassigned goods	-88	105	91	184	264	294	286	150	367	235	431
Total	-23 526	-24 020	-22 374	-27 820	-30 109	-29 867	-34 143	-40 098	-45 008	-35 116	-31 775

Source: Eurostat, calculations by DIW Berlin.

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are normally mainly traded regionally. The mineral oil processing industry plays a major role and a significant share of its production is exported.²⁰ The production of investment goods, on the other hand, is only of very minor importance.

A look at the goods with the highest turnover illustrates the strong domestic market bias of the Greek manufacturing industry even more clearly. Soft drinks, cigarettes, cheese products, milk and dairy produce, sausage products, fruit products, baked goods, and printed materials (particularly newspapers and magazines), cement, concrete, and other construction-related products (made from wood, plastic and metal, for example) and also packaging (made from paper or plastic) are all high-

ly significant. It is more difficult to clearly distinguish the sales territory for the various aluminum products (including beverage cans) produced in Greece because of its bauxite deposits. There are also the remnants of a ship building industry (particularly ship repair), a sector which is at a disadvantage throughout Europe due to competition from Asia. Additionally, Greece has a number of pharmaceutical companies but overall their sales volume is insignificant.²¹

A comparison of the Greek industry and production structure with that of imports shows that most imports are complementary—competition between domestic and imported goods is minimal.

²⁰ According to the Hellenic Petroleum's 2009 Annual Report, Greece's largest oil refining company, of the total 14.9 million tons produced in that year, 3.8 million went into the transit market and 2.3 million was exported.

²¹ According to Eurostat, total pharmaceutical production turnover in Greece in 2009 was just under 900 million euros; by way of comparison, in Saxony-Anhalt the equivalent figure for the same year was 1.2 billion euros (Statistical Office, Saxony-Anhalt).

Table 2

Selected Sectors' Share of the Total Gross Value Added in EU Member States

In percent

	Agriculture, forestry and fisheries	Manufacturing industry / Production of goods	Hospitali- ty industry	Programming activities, IT services	Architectural offices and engineering firms; technical, physical, and chemical testing and analysis	Research and development
	2010			2009		
EU	1.7	14.9	3.1	1.8	1.4	0.5
Belgium	0.7		1.7	1.7	1.2	0.3
Czech Republic	1.7	23.3	1.9	2.1	1.7	0.3
Denmark	1.3	11.5	1.4	2.1	1.8	0.6
Germany	0.8	20.9	1.6	1.7	1.4	0.4
Estonia	3.3	16.4	1.1	1.9	1.3	0.6
Ireland	1.7	25.8	2.1	1.4		0.1
Greece	3.1	10.0	6.8	0.4	0.9	0.3
Spain	2.6	12.9	7.2	1.2	1.3	0.1
France	1.7	10.0	2.6	2.2	1.6	1.0
Italy	1.9	16.0	4.1	1.6	0.9	0.6
Cyprus	2.4	6.4				
Latvia	4.5	13.4	1.5	1.4	1.3	0.2
Lithuania	3.3	18.8	1.4	0.8	1.0	0.3
Hungary	3.8	22.3	1.5	1.8	1.2	0.4
Malta	1.8	13.5				
Netherlands	1.8	12.3	1.7	2.2	1.5	0.4
Austria	1.5	17.5	4.9	1.4	1.3	0.2
Poland	3.8	16.8	1.2			
Portugal	2.2	12.7	5.0 ¹	1.0	0.9	0.4
Romania	6.7	22.0	1.9 ¹	1.0	1.0	0.3
Slovenia	2.5	19.4	2.2	1.5	2.1	0.6
Slovakia	3.1	23.6	1.1	1.8	1.2	0.3
Finland	3.0	18.0	1.7	2.2	1.7	0.6
Sweden	1.8	15.8	1.5 ¹	2.7		
UK	0.6	10.0				

¹ Data from 2009.

Source: Eurostat, calculations by DIW Berlin.

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The small-scale structure of the Greek economy is particularly striking. Almost half of all those employed in the manufacturing industry work for companies with fewer than 10 employees (Table 5).²² In all other EU member states, small enterprises are much less prominent. On the other hand, there are barely any larger companies in Greece; businesses with 250 employees or more only provide a fifth of all jobs. This is further evidence that companies operating in the manufacturing industry in Greece have a strong domestic market bias as small enterprises generally have a sales radius that is confined to a smaller territory and often lack the capacity to operate on foreign markets.

Prominent Role of Tourism

Official government statistics provide no direct information about the economic significance of the tourist industry. This is because a number of branches of the economy are linked with the tourist trade, but no details are available on the exact contribution tourism makes to these branches' economic output. Industries providing tourist services include parts of the transport industry and health economy. The retail trade also benefits. However, it is simplest to use statistical information from the hospitality industry as an indicator of tourism, even though this only captures part of the tourist industry's economic output, and some of the revenue from this branch of the economy also has to be assigned to domestic demand.

²² Data is only currently available up to 2007. This should, however, be sufficient for this study as size structures only tend to change very slowly.

Table 3

Structure of Gross Value Added in the Manufacturing Industry in 2010

In percent

Production or manufacture of...	Greece	EU
Comestible goods; beverages, tobacco	33.3	13.7
Textiles, clothing, leather, leather goods	4.7	4.1
Wood and paper, printed matter	10.3	7.3
Mineral oil	10.5	1.2
Chemical products (excluding mineral oil etc.)	4.3	6.9
Pharmaceutical products	5.6	4.6
Rubber and plastic products, glass, ceramics, stone and earth	8.0	9.0
Metal, metal products	12.5	14.2
Data processing devices, electronic, and optical products	0.6	4.4
Electrical equipment	2.5	5.4
Machinery	2.0	10.9
Cars and car parts; other vehicles	1.9	9.4
Furniture, jewelry, musical instruments, toys; repairs	3.8	9.0
Total	100	100

Source: Eurostat, calculations by DIW Berlin.

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Food production accounts for a third of the Greek net product.

Table 4

Industrial Goods Manufactured in Greece¹ with the Highest Revenue in 2009

In million euros

Rank	Prodcom-code	Commodity group	Revenue
1	110	Beverages	1 436.6
2	105	Milk and dairy products	1 428.8
3	244	Aluminum and copper products	1 034.7
4	235	Cement, lime, plaster	949.7
5	212	Medicinal drugs	886.2
6	103	Products from fruit and vegetable processing	868.5
7	222	Plastic products	763.2
8	108	Sugar, confectionary, cocoa, coffee, convenience foods	712.0
9	107	Baked goods, pastry goods	700.4
10	241	Iron, ferrous products	688.7
11	181	Printed matter	646.6
12	251	Structural metal products, metal joinery elements	638.4
13	236	Concrete construction products, limestone, plaster	609.4
14	101	Products from meat processing	608.5
15	120	Cigarettes, tobacco	480.4
16	106	Flour, other milled products, starch	453.8
17	172	Products from paper and cardboard processing	426.0
18	204	Soap, detergents, personal hygiene products	351.1
19	331	Repairs (of ships, boats, machinery)	349.8
20	104	Food oils and fats, margarine	341.1

¹ Does not include goods produced by companies subject to confidentiality due to small sample size (fewer than three).

Source: Hellenic Statistical Authority, calculations by DIW Berlin.

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The commodity groups with the highest turnover by far are beverages and dairy products.

In 2010, the accommodation and food service activities accounted for almost seven percent of the Greek net product; this is more than twice the EU average. Among those countries for which information is available, only the Spanish tourist industry contributes a higher share. Approximately three quarters of the hospitality industry's output is produced by international tourism based on the ratio of overnight hotel stays by foreign tourists to total overnight stays. However, the hospitality industry does not represent the entire tourist industry; the German hospitality industry, for example, provides approximately 40 percent of services to foreign tourists.²³ If we transpose this share onto Greece, then foreign tourism generates between a tenth and an eighth of the country's net product. This means that foreign tourism is slightly more significant for the Greek economy as a whole than the manufacturing industry but considerably more important if we take the export base into account, as manufacturing industry output in Greece is focused primarily on the domestic market.

Foreign tourism is highly dependent on economic trends. This is why the global financial crisis had such a negative impact on business in Europe's key tourist countries (based on the number of overnight stays) (Table 6). During the economic upturn which preceded the crisis, on the other hand, mostly strong growth was observed. However, since the crisis, foreign tourism has begun to recover again—also in Greece. Moreover, there are certain developments, independent of economic trends, which are dictated by tourists' preferences: over the last decade, some key tourist destinations such as Spain have become less attractive to foreign visitors, while others, such as Italy, have managed to attract more foreign tourists. Greece has also experienced a slight upward trend.

Tourism is currently on a worldwide growth trend although growth of European tourism is below average.²⁴ Focusing on the Mediterranean region, tourism in eurozone countries such as Greece has to compete with those countries both outside the EU (Croatia, North Africa) and also within the EU but outside the eurozone (Bulgaria), which are able to provide tourist services at more favorable prices, and also with countries that have managed to capture market shares by significantly expanding capacity, such as Turkey.²⁵

²³ F. Pavel, Wirtschaftsfaktor Tourismus. Ein modulares Tourismus-Satellitenkonto (TSA) zur Berechnung der Wertschöpfungs- und Beschäftigungseffekte der Tourismuswirtschaft in Deutschland. Berlin: 2012.

²⁴ See UNWTO, „Tourism Barometer,” Statistical Annex, no. 10 (January 2012).

²⁵ Prime Minister of the Republic of Turkey, Investment Support and Promotion Agency of Turkey, Turkish Tourism Industry Report (2010).

Foreign tourism in Greece is hugely seasonal, which leads to low capacity utilization and relatively high costs. In the summer months from July to September, for example, the number of overnight stays by foreign tourists was over 30 times higher than in the months from December to February.²⁶ In other tourist areas in, for instance, Northern Europe and probably also overseas, seasonal fluctuations are not as dramatic. In Italy, the equivalent ratio is 4 to 1, and in both Spain and Portugal, it is 3 to 1. In Austria, the ratio is 1 to 1.

Labor costs play a comparatively minor role in the Greek hospitality industry. In 2010, wages only constituted a sixth of the hospitality industry's GVA, while in Spain this figure was a third, and in Italy, almost a half. This is only partially due to wage levels. According to Eurostat, the hourly wage in the hospitality industry in 2008 (the most recent available information) was 15.76 euros in Italy, 12.83 euros in Spain, and 11.39 euros in Greece. The hourly wage in this industry was only 8.49 euros in Portugal, for example, 4.00 euros in Turkey, and as low as 1.55 euros in Bulgaria. The low share of labor costs in Greece is mainly a result of a relatively large number of self-employed people working in the hospitality industry. In 2010, half of all those working in the hospitality industry in Greece were self-employed—in the EU as a whole, this figure was a sixth, in Italy a third, and in Spain a quarter. Prices are, therefore, heavily dependent on self-employment earnings and building costs.

Very Few High-Quality Business Services

Another component of the export base are certain business services, including consulting and engineering services which are sold abroad, and also software development or commercial research and development. These are essentially high-value goods. In Greece in 2012, engineering firms generated 0.6 percent of the total GVA and research and development companies 0.3 percent, which is very low by international standards. There are no statistics available for Greece on the sales in these sectors from a regional perspective. In Germany, engineering firms have an export ratio of 16 percent (2009 sales revenues from customers based abroad), and commercial research and development companies exports a fifth of all their services.²⁷ Even if Greece realized the same export rates as Germany, this sector would still only play a rather minor role in Greek foreign trade.

²⁶ Calculation based on Eurostat data. In Austria, for example, the ratio is 1:1.

²⁷ German Federal Statistical Office, „Dienstleistungen. Strukturhebungen im Dienstleistungsbereich. Erbringung von freiberuflichen, wissenschaftlichen und technischen Dienstleistungen 2009," Series 9, Row 4.4 (2009).

Table 5

Distribution of Employment in the Manufacturing Industry by Company Size in 2007

Share in percent

	Companies with ... employees				
	1 to 9	10 to 19	20 to 49	50 to 249	250 and above
Greece	46	4	9	20	21
Cyprus	32	14	17	23	13
Italy	25	15	16	21	22
Portugal	21	12	19	29	18
Spain	18	11	20	24	27
Poland	18	4	9	28	42
Netherlands	16	9	15	28	32
Hungary	14	7	11	25	43
Slovenia	13	5	9	27	46
Czech Republic	13	6	10	27	44
France	12	7	12	22	47
Belgium	12	6	13	24	45
UK	11	7	12	26	43
Sweden	11	6	10	23	50
Austria	10	7	11	26	46
Latvia	10	9	17	38	27
Estonia	10	8	17	38	27
Bulgaria	10	7	15	35	33
Lithuania	10	8	15	35	33
Finland	9	6	10	24	51
Romania	8	6	12	29	46
Denmark	8	6	12	28	46
Germany	7	8	7	25	53
Ireland	6	6	13	30	45
Luxembourg	5	5	8	23	60
Slovakia	5	5	8	26	56

Source: Eurostat, calculations by DIW Berlin.

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The Greek manufacturing industry is strongly characterized by small enterprises.

However, as engineering services are often linked with the supply of goods (in plant construction, for instance), we can assume that this sector has a low rate of export in Greece. Research services are also frequently correlated with the demand for manufacturing goods. Greece also only has a very small number of software production and IT service companies.

Small-Scale Economic Structure

Economies of scale play a significant role in international competition as large-scale production is generally accompanied by lower marginal costs. National economies where small enterprises are of central importance are, therefore, invariably at a disadvantage—provided that the small companies do not represent a wave of start-

Table 6

Overnight Stays Made by Non-Residents in Tourist Accommodations

	Greece	Spain	Italy	Portugal	France	Austria	Germany
	Millionen						
2000	47.0	233.9	140.4	25.8	108.8	64.5	42.4
2001	42.5	231.4	146.7	25.2	110.3	65.5	40.6
2002	41.0	220.7	145.6	25.1	113.2	67.3	40.4
2003	40.4	217.9	139.7	24.9	103.7	68.2	41.6
2004	38.8	209.1	141.2	24.6	104.2	68.3	45.4
2005	40.7	209.5	148.3	25.4	108.0	69.7	48.2
2006	43.1	224.5	156.9	26.8	105.9	70.0	52.9
2007	48.1	225.5	163.5	28.7	108.6	71.5	54.5
2008	48.0	223.8	161.8	28.1	107.0	74.7	56.2
2009	46.7	200.6	159.5	25.0	98.7	72.2	54.1
2010	49.0	213.3	165.2	25.4	120.4	66.8	59.7
	2000 = 100						
2001	90	99	104	98	101	102	96
2002	87	94	104	97	104	104	95
2003	86	93	99	96	95	106	98
2004	83	89	101	95	96	106	107
2005	87	90	106	98	99	108	114
2006	92	96	112	104	97	109	125
2007	102	96	116	111	100	111	128
2008	102	96	115	109	98	116	133
2009	99	86	114	97	91	112	128
2010	104	91	118	98	111	104	141

Source: Eurostat, calculations by DIW Berlin.

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Greek tourism picked up again slightly in 2010.

ups leading to the beginning of a growth process, which is not the case in Greece. The structure of Greek enterprises represents a gradual development.

As has already been shown, small enterprises play an exceptionally important role in the Greek manufacturing industry. As can be seen from the rate of self-employment as a share of total employment, this phenomenon also extends into other branches of the Greek economy. In 2010, the aforementioned rate of self-employment (including family workers) as a share of total employment was 30 percent (Figure 5).²⁸ If public administration is excluded, this figure is almost 40 percent (Figure 6). This represents the highest rate in the EU. All other member states have a far lower self-employment rate. There is also evidence that a higher self-employment rate is generally an indicator of economic underdevelopment as there is a slight negative correlation

between the self-employment rate and economic growth per capita in EU member states.²⁹

Self-employment rates are particularly high in agriculture and fisheries, the hospitality industry, professional and also scientific and technical services, trade, and the transport industry. In the construction industry, the rate is lower but even here, there is still one self-employed worker for every employee. Even in manufacturing, the ratio is three to one. As expected, there are barely any self-employed workers in the energy and water supply sector.

Conclusion

For a long time, Greece has been living beyond its means. Consumption of goods has far exceeded economic output. This development was not triggered by entry to

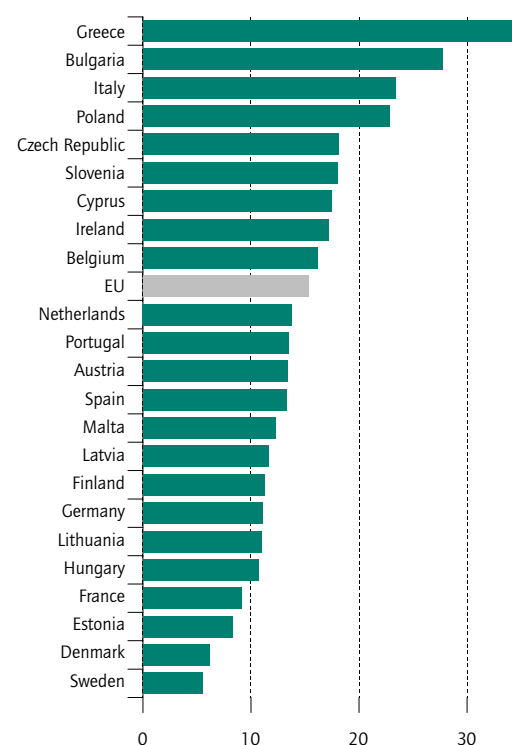
²⁸ The share has fallen over the last decade; in 2000, it was two percentage points higher.

²⁹ K. Brenke, „Solo-Selbständige in Deutschland – Strukturen und Erwerbsverläufe. Untersuchung für das Bundesministerium für Arbeit und Soziales,“ (in preparation) (2012).

Figure 5

Self-Employment¹ as a Share of Total Employment in 2010

Share in percent

¹ Including family workers.

Source: Eurostat, calculations by DIW Berlin.

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The Greek self-employment rate as a share of total employment is considerably higher than average.

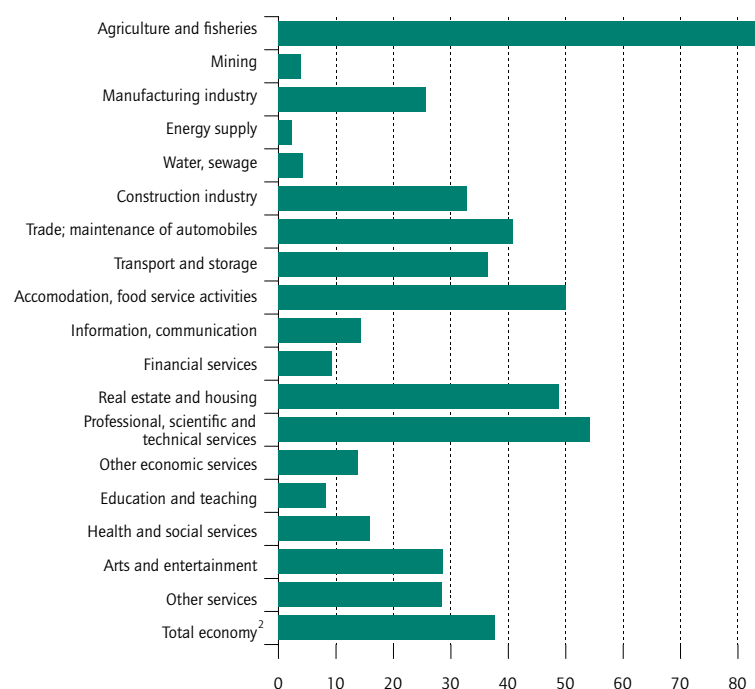
the eurozone, but is rather a consequence of the significant foreign trade deficits which, according to official data recently published by the Hellenic Statistical Authority, have been accumulating at least since the mid-90s.³⁰ Entry to the euro simply accelerated the excessive consumption of goods, as a lax monetary policy and the banks' generous lending provided incentives for a large increase in private and public consumption. Evidently, the government was responsible for channeling money from abroad and then redistributing it. When, at the end of 2009, it became clear that public debt was far higher than initially indicated, capital market operators lost confidence in the Greek government. However, this was just the trigger. At some point in the very near future, there would have been a proverbial straw to

³⁰ The oldest data that could be found were for 1995; at that time, the current account deficit was a substantial seven percent of the GDP.

Figure 6

Self-Employment¹ as a Share of Total Employment in Selected Industries in Greece in 2010

Share in percent

¹ Including family workers.² Excluding public administration, social security, defense.

Source: Eurostat, calculations by DIW Berlin.

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The rate of self-employment is particularly high in the agriculture and hospitality sectors.

break the camel's back in any case. The eurozone member states and international institutions are essentially on track to becoming Greece's only creditors—apart from loans from private investors, which, since the reduction in Greek debt, are tied up in the long term. Refinancing of the country's capital market is currently not an option and this will continue to be the case in the medium term.

This raises the question as to why Greece was even granted credit for such a long time. On the one hand, entry to the eurozone played a part as it meant that creditors were no longer exposed to the risk of devaluation of the national currency and thus also state debt. On the other hand, as is so often the case in history, national insolvency was never deemed to be credible—especially not in Europe.

Even during the current crisis, Greece is continuing to accumulate debts abroad because it still consumes and invests more than it produces in spite of the fact that consumption has already been dramatically reduced. If consumption were to be cut even further, production, which has a strong domestic market bias in Greece, would also fall and the economy would find itself in even more of a downward spiral. Measures to consolidate government finances should, therefore, not be put on the back burner. Such steps include the development of a more effective administration and an efficient system of taxation as well as the privatization of state property. Infrastructure facilities can only be privatized as far as regulatory policies allow. Further tax increases are also an option, particularly those focusing on high income and wealth, which are, therefore, less likely to have a damaging effect on overall economic demand. However, such measures can only alleviate Greece's problems.

First and foremost, it is essential that the country's economic base is strengthened. Due to its large external deficit, it is not enough for Greece to be able to balance its export trade—in the medium-term it needs to accumulate a surplus in order to be able to pay off its remaining debt. Economists who claim that the dramatic wage increases in Greece, and particularly the wage restraint in Germany, undermined the competitive position of Greek producers, have not put their finger on the real problem. Entire national economies do not compete with one another, it is only sectors or industries that do this, and Greece simply has an extremely limited export base.

An important component of the Greek export base is tourism, which, in comparison with other Southern European countries, has experienced rather favorable development.³¹ Wages do not play a particularly dominant role in this sector, particularly in Greece. The general price level, which, in turn, depends on the exchange rate poses a greater problem—in comparison with Turkey, for example. As a massive wage reduction is not really possible, the price level can be beaten down at best through currency devaluation. Other measures to extend the season could have a positive impact on Greek tourism (expansion of health-related tourism, for example). However, such measures require significant investment. It is unlikely that tourism could become the main pillar of the export base although the situation may differ for a small number of Greek regions. Furthermore, Greece has very few attractive city tourism destinations, and city tourism is booming worldwide.

The industrial base is extremely weak and manufacturing industry production is primarily focused on the domestic market. Small-scale industries are always particularly strongly focused on local sales, as, all over the world, there is demand for goods which are, to a certain degree, produced locally (perishable foodstuffs, daily newspapers, or goods with high transportation costs such as concrete components). Greece's trade in goods with Germany, for example, is clearly complementary and, because there is very little reciprocal competition, the weak wage development in Germany does not place the Greek automobile industry under pressure, as it simply does not exist. Consumers are even less likely to purchase olive oil produced in Germany. Only the poor development of mass income in Germany and the resulting fall in consumer demand may have had an impact on Greece. Wage development in Germany is only likely to have caused problems for countries which have substitutive trade relations with Germany i.e., countries producing goods which are similar to those manufactured in Germany for export.

It is essential for Greece to broaden its industrial base. As the situation in the East German federal states illustrates, this is a long-term goal and achieving this has enormously high cost implications. However, comparable financial resources are simply not available. If such resources were to be mobilized by the EU, other countries would then also request similar assistance—particularly as unilateral financial support for the Greek economy would lead to competitive disadvantages in other regions. Any comparison with eastern Germany is invalid inasmuch as the focus there was on reindustrialization whereas in Greece progress first needs to be made with industrialization. The eastern German states, and also some eastern European countries, already had an industrial tradition and thus had access to extensive knowledge, significant qualified industrial labor force potential, and an industry-oriented infrastructure, particularly in higher education. The Greek economy possesses nothing of the kind. The manufacturing industry, like other branches of the economy, is driven to a great extent by small enterprises. The employment structure with its high self-employment rate is more typical of emerging markets. The preconditions for the necessary industrialization are, therefore, not exactly in place.

Over the last decade, on average, aggregate financial assistance flowing from the EU into Greece amounted to over two percent of economic output. This assistance was provided by EU programs concentrating on redistribution, or, in the case of individual industries, on preserving existing structures—from both a regional and social point of view. It has gradually become clear

³¹ H. Flassbeck and F. Spieker, „Die griechische Krise hat deutsche Wurzeln,“ *Financial Times Deutschland*, December 11, 2009; Horn, Lindner, and Niechoj, „Schuldenschnitt für Griechenland.“

that Greece, like a number of other countries, needs a growth policy as a matter of priority.

Greece will continue to be a problem child for Europe for some time. On the one hand, the country carries an enormous debt burden which must be rapidly reduced. On the other hand, Greece needs to expand those parts of its economic base that would strengthen its position in the international division of labor and this involves a protracted process. A significant reduction in the cost and price levels in Greece in comparison with other countries would certainly help the situation. In any event, a sustainable growth concept is essential for Greece. This is something that can only be developed and implemented by the country's national government. The international community will gradually become the country's only creditor, and Greece will be reliant on long-term drip-feeding and external support.

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SIX QUESTIONS TO KARL BRENKE

»There Is Virtually No Export Base«

1. Mr. Brenke, Greece has debts amounting to 145 percent of its gross domestic product. Other states have similar or, in some cases, even higher debts but are still solvent. Why are the problems in Greece more serious? First of all, the amount of debt doesn't tell us anything at all. What matters is that potential creditors have the feeling that they will get their money back. In the case of Greece, this belief is gone. It also has to do with the fact that Greece has been using trickery and deception. But, above all, it has to do with the fact that Greece only has a weak economic base and there is no prospect of the debts being paid back on schedule, and if you don't have much confidence in a debtor, you don't lend them any more money.
2. What is the effect of more efficient collection of taxes, in other words, an increase in public revenue and also the austerity measures that are being demanded? Greece has made a bit of a mess of things in the past as far as collecting taxes goes. They had no effective system in place, and this also applies to other areas of public administration. Here, structures must undergo fundamental reforms and, in some cases, be established first. The state needs to have a solid foundation, as is to be expected of any country in the European Union. If more taxes are collected now, it will no doubt be possible to increase the country's revenue. All this will, however, just alleviate matters because the problem in Greece is not only that it defaults on tax payments, but the fact that, measured in terms of economic performance, people have been living well beyond their means.
3. How would you assess Greece's economic capacity? Greece's economic capacity is low. The main problem is

that there is virtually no export base. This contributes to the fact that virtually no revenue is being generated through trade and commerce with other countries. Moreover, the Greek economy has a strong domestic market bias. One strong pillar is still tourism, but this will not be able to carry the entire country. The manufacturing industry is extremely weak. Furthermore, the Greek economy is organized on a very small scale. There is one self-employed worker for every two salaried employees. This is a structure more typical of emerging markets.

4. How could Greece's economic base be permanently strengthened? Greece lacks some of the prerequisites for strong economic reconstruction, also because it is tied to the euro. There is no room for maneuver, it is not possible to determine the exchange rates or conduct its own trade policy. This makes things very difficult. What Greece needs is a strong growth policy and much less a redistribution policy, as very actively pursued in Greece over the last few decades.
5. Would Greece be better off without the euro? As far as the development of individual sectors is concerned, definitely, yes.
6. Greece has lived beyond its means for years, but even in the current crisis, it is still accumulating more foreign debt. Is that not adding fuel to the fire? Greece must cut its spending and, first and foremost, it has to reduce private and public consumption. In an economy with a strong domestic market bias, this of course has negative repercussions, such as a decline in economic production. This means that tax revenue falls and the government has to spend more money on social measures such as unemployment benefits. That's a very difficult situation.

Interview by Erich Wittenberg.

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

by Michael Fritsch, Alexander Kritikos, and Alina Rusakova

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

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

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

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

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

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

Box

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

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

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

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

tion offices, which can be used for information about start-ups. The information contained in the statistics about the business starter and the relevant business is very limited. Evaluations of the status of self-employed are not available. Since many businesses are registered but do not always trade, the number of start-ups in the business registration statistics is overestimated; there is also a lack of information about businesses that are not required to register, such as freelance professions. Empirical analyses have shown that the number of start-ups in these statistics is greatly exaggerated.² In diluted form, this also applies to start-up statistics from the Institute for SME Research³ (Bonn), which is essentially based on business registration statistics.

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

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

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

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

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

Development of Self-Employment and Entrepreneurial Behavior

According to the Micro-census, every year in Germany, about one percent of the working population takes the decision to become self-employed full-time (Figure 1). However, this number has varied significantly in the past few years; it rose from 262,000 full-time start-ups in 2001 to 396,000 in 2005.³ In 2009, there were 294,000 start-ups according to the Micro-cen-

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

As a result of these start-ups and the relatively high survival rates⁴ of new businesses, the number of self-employed people rose between 1991 and 2009 by 40 per-

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

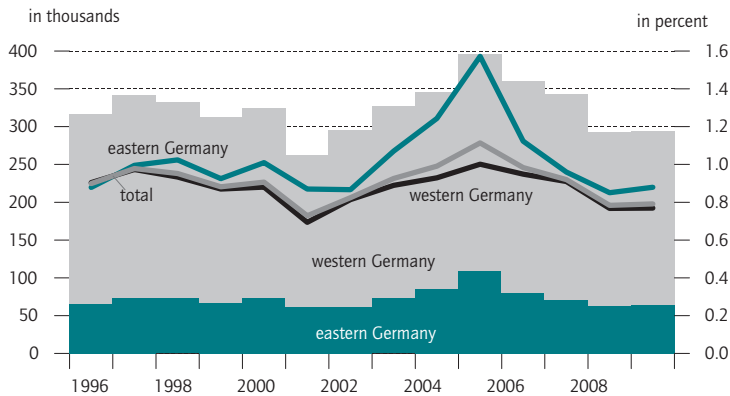
In 2009, a total of eleven percent of working people was in full-time self-employment; this was almost three percentage points higher than in 1991. In contrast, according to OECD statistics, self-employment stagnated or even decreased in many other established and innovation-driven market economies.⁶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

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

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

Figure 1

Start-Up Activities in Eastern and Western Germany



Columns = number of start-ups (left axis).

Lines = start-up rate (right axis).

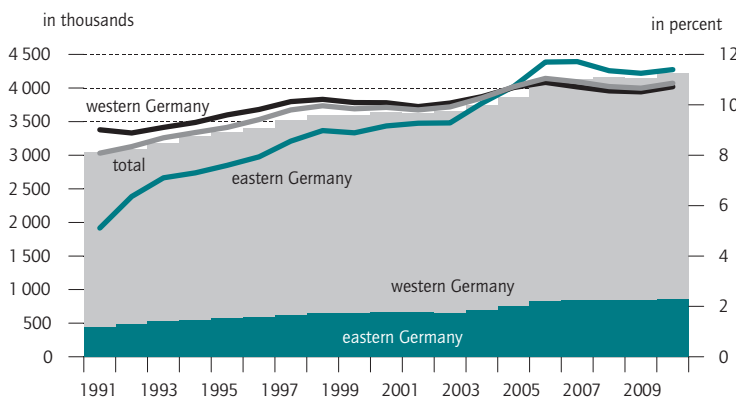
Source: Micro-census of the Federal Statistical Office, calculations by the DIW Berlin.

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

Figure 2

Professional Self-Employment in Eastern and Western Germany¹



Bars = number of self-employed (left axis).

Lines = self-employed rate (right axis).

¹ Data estimated for 1994 and 1995.

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

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

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

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

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

Industry Structure of Self-Employed

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

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

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

Entrepreneurs and the Self-Employed Are Getting Older

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

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

years in 2010.⁸ This aging process is even more evident among entrepreneurs and the self-employed.

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

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

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

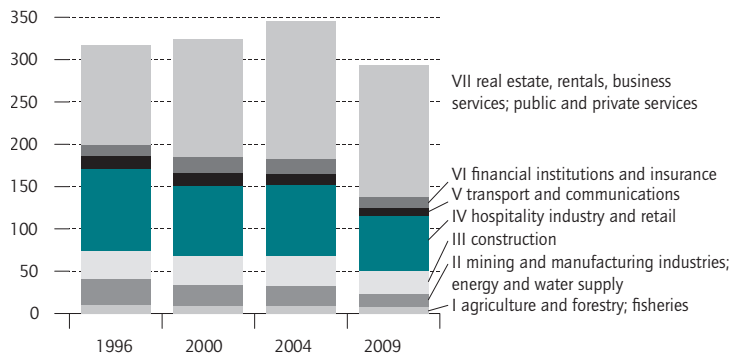
More Women and Unmarried People Are Becoming Self-Employed

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

Figure 3

Business Starters by Economic Sector

in thousands



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

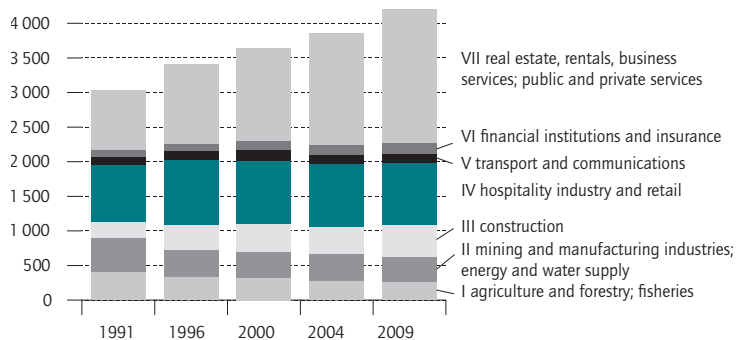
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More than half of all start-ups are now in the service sector.

Figure 4

Self-Employed by Industry Sectors

in thousands



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

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

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

8 See „Beruf und Karriere,“ Süddeutsche Zeitung, January 7, 2012.

Table 1

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

	1996		2000		2004		2009	
	Business starters	Start-up rate ¹	Business starters	Start-up rate ¹	Business starters	Start-up rate ¹	Business starters	Start-up rate ¹
Age								
Under 25	7.1	0.5	7.1	0.5	7.6	0.7	9.2	0.6
25-34	42.6	1.4	36.4	1.3	30.4	1.5	31.4	1.2
35-44 years	29.9	1.0	34.3	1.1	36.7	1.2	32.7	0.9
45-54 years	15.5	0.6	15.9	0.6	18.5	0.7	19.0	0.5
55-64 years	3.9	0.3	5.0	0.4	5.7	0.5	6.0	0.3
65 years and older	0.9	0.8	1.2	1.1	1.1	0.8	1.7	0.7
Sex								
Male	66.7	1.0	64.6	1.0	63.5	1.1	58.4	0.8
Female	33.3	0.7	35.4	0.7	36.5	0.8	41.6	0.7
Marital status								
Unmarried	43.6	1.0	44.1	1.0	47.3	1.1	52.5	0.9
Married	56.4	0.8	55.9	0.8	52.7	0.9	47.5	0.7
German national								
Yes	87.2	0.9	88.1	0.9	88.1	1.0	82.8	0.7
No	12.8	1.4	11.9	1.3	11.9	1.4	17.2	1.5
Education²								
No vocational training qualification	11.9	0.6	14.5	0.7	14.0	0.8	17.3	0.8
Training qualification	63.1	0.8	60.4	0.8	60.9	0.9	56.7	0.7
University degree	24.9	1.4	25.1	1.5	25.2	1.5	25.9	1.1
Total in percent	-	0.9	-	0.9	-	1.0	-	0.8
Total in thousands	316	-	324	-	345	-	294	-

¹ Proportion of business starters to the general workforce.

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

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

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

Increasing Numbers of Foreigners Are Becoming Self-Employed in Germany

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

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

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

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

Table 2

Demographic and Socio-Economic Characteristics of the Self-Employed

in percent

	1991			1996			2000			2004			2009		
	Self-employed	Salaried employees	Self-employed rate ¹	Self-employed	Salaried employees	Self-employed rate ¹	Self-employed	Salaried employees	Self-employed rate ¹	Self-employed	Salaried employees	Self-employed rate ¹	Self-employed	Salaried employees	Self-employed rate ¹
Age															
Under 25 years	2.7	17.1	1.4	1.6	12.9	1.3	1.5	13.0	1.2	1.5	12.4	1.5	1.5	12.5	1.5
25-34 years	18.5	27.1	5.7	19.7	28.1	6.8	16.6	24.8	6.9	13.3	20.8	7.2	12.4	20.1	7.0
35-44 years	27.7	23.3	9.5	29.6	26.3	10.5	31.2	28.7	10.7	32.8	30.1	11.7	29.7	26.5	12.1
45-54 years	29.0	22.9	10.0	26.7	21.2	11.6	27.2	22.0	12.0	29.1	24.6	12.5	31.3	26.1	12.8
55-64 years	17.4	9.0	14.6	18.0	10.9	14.7	19.0	10.9	16.1	18.5	11.3	16.5	18.8	13.6	14.5
65 years and older	4.7	0.5	44.4	4.5	0.6	43.8	4.5	0.6	44.4	4.8	0.8	40.9	6.2	1.2	39.2
Sex															
Male	74.3	57.0	10.3	73.1	55.9	12.0	72.2	54.8	12.7	71.1	53.3	13.9	68.9	52.5	13.8
Female	25.7	43.0	5.0	26.9	44.1	6.0	27.8	45.2	6.4	28.9	46.7	7.0	31.1	47.5	7.4
Marital status															
Unmarried	24.7	37.3	5.5	27.9	38.5	7.1	29.9	40.3	7.6	32.5	41.9	8.6	36.3	46.1	8.8
Married	75.3	62.7	9.6	72.1	61.5	10.9	70.1	59.7	11.5	67.5	58.1	12.3	63.7	53.9	12.6
German national															
Yes	94.3	92.9	8.2	92.7	91.8	9.6	92.9	91.6	10.1	92.3	91.7	10.9	90.3	91.4	10.8
No	5.7	7.1	6.7	7.3	8.2	8.5	7.1	8.4	8.5	7.7	8.3	10.1	9.7	8.6	12.1
Education²															
No vocational training qualification	11.8	17.2	5.6	10.5	17.6	5.8	9.6	18.3	5.4	9.2	17.6	5.8	10.0	18.3	6.2
Training qualification	69.8	71.7	7.8	64.7	68.4	8.9	63.8	67.9	9.2	62.2	67.5	9.9	60.1	65.4	10.1
University degree	18.5	11.1	12.7	24.8	13.9	15.5	26.6	13.7	17.3	28.7	14.8	18.7	29.9	16.2	18.4
Total in percent	-	-	8.1	-	-	9.5	-	-	10.0	-	-	10.8	-	-	10.9
Total in thousands	3 037	34 408	-	3 409	32 574	-	3 643	32 960	-	3 852	31 807	-	4 215	34 447	-

¹ Proportion of business starters to the general workforce.² Voluntary information. The numbers refer to the highest professional qualifications.

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

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Education Is Key

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

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

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

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

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

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

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

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

Increases in Income from Self-Employment

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

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

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

Table 3

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

Share of all business starters in percent

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

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

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¹² See „Nicht immer Schokolade,“ Süddeutsche Zeitung, October 17, 2011.

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

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

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

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

Table 4

Monthly Net Income by Income Category in 2010

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

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

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

Conclusion

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

Table 5

Income Distribution of Business Starters, Self-Employed and Employees

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

¹ Only business starters who were in paid employment in 2001.

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

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Table 6

Income Development of Business Starters¹ in the First Years after Start-Up
in percent

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

¹ Only business starters who were in paid employment in 2001.

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

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

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

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

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

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German-Chinese Economic Relations—Opportunities and Risks

by Georg Erber

Economic relations between Germany and China have developed exceptionally well over the past few decades. China has grown to become one of Germany's key trading partners and may even become the second-largest trading partner after France in the coming year. And yet China's focus is increasingly shifting towards capital goods manufacturing, meaning Chinese enterprises will be competing with German enterprises more strongly on global markets. There are more and more indications that the extensive direct and indirect subsidizing of businesses in China is a major contributory factor to cutthroat competition, which is becoming increasingly incompatible with the concept of free trading within the WTO regulatory framework. Recent examples of this can be found, in particular, in the manufacture of wind turbines, photovoltaic installations, and, more recently, even high-speed trains, as well as the exploitation of China's quasi-monopoly on rare earths. In other high-tech sectors, too, the competition is likely to become fiercer. What is needed, therefore, is forward-looking industrial, innovation and trade policy that does not create major distortions of competition in Germany's economic relations with China.

As a result of the economic reforms introduced by Deng Xiaoping in the late 1970s, the Chinese economy has developed into a socialist market economy with very specific features and has experienced rapid catch-up growth in comparison with western industrialized countries. In 1994, China's real GDP was on a par with that of Germany, and by 2001 it had reached the same level as that of Japan. By 2016, it is expected to catch up with the USA¹ (Figure 1). China's entry to the World Trade Organization (WTO) in 2001 enabled it to surge ahead in global trade, thanks to export-oriented growth and major technological transfer from abroad, facilitated by low labor costs and an attractive exchange rate.

China's economic growth has proved to be steadfast, particularly during the 1998 Asian crisis and the global recession in 2008/2009. This is down to various measures taken to get the economy moving again.² Recently, China has been one of the biggest drivers of global economic growth, a development which is expected to continue in the year ahead, provided, of course, the debt crisis within the eurozone does not worsen (Figure 2).

Track Record in Economic Cooperation ...

As a major export nation, especially in the automotive sector and mechanical engineering, Germany has profited from the fast growing domestic market in China. In turn, China has become an important export market and supplier for Germany, in particular in the ICT

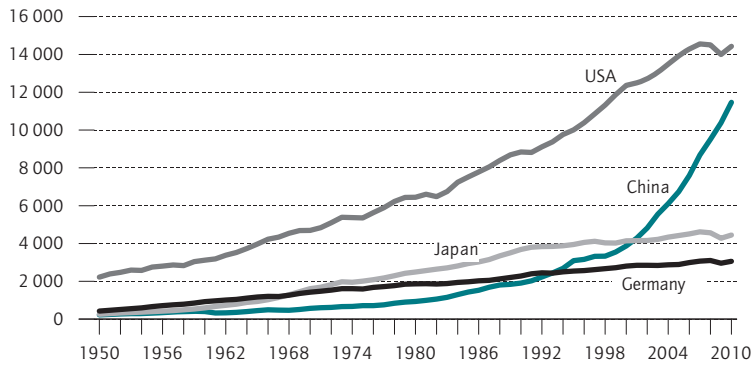
¹ Calculated in EKS purchasing power parities, price basis 2010. EKS = Multilateral Fisher Index as per Eltoto, Kovacs and Szulc. See also Conference Board, Productivity, Employment, and Growth in the World's Economies, Total Economy Database™, update, New York, September, 2011; S. Jingli, "China's economy to surpass US in 2016: IMF," China Daily, April 26, 2011.

² C. Dreger and Y. Zhang, "The Chinese Impact on GDP Growth and Inflation in the Industrial Countries," DIW Discussion Paper no. 1151 (2011).

Figure 1

Growth of Real GDP¹

In US dollars (bn)



¹ Price basis 2010, all figures converted using EKS purchasing power parities from 2005.
Source: Conference Board, Total Economy Database.

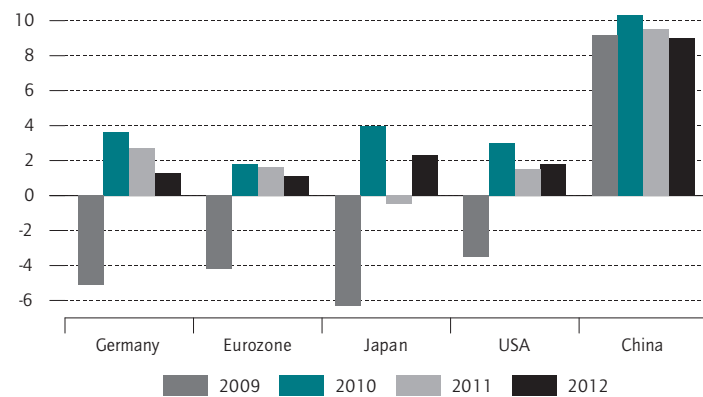
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WTO membership speeds up China's rapid catch-up growth even more.

Figure 2

Real GDP Rates of Change

In percent



Source: IMF, WEO September 2011.

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China's economic growth proved to be stable despite the 2009 financial crisis.

sector. In the first half of 2011, this resulted in a trade deficit of 6.1 billion euros for Germany.³

Owing to the increase in the global division of labor, China has become exceedingly important in the glo-

³ Destatis, "Foreign trade for first half of 2011: exports increased by 14.7 per cent," press release no. 340 of September 15, 2011.

bal value chain in its capacity as a production location for German businesses. This year, China is expected to become Germany's fourth-largest trading partner after France, the USA and the Netherlands.⁴ In the coming year, China may even become the second-largest trading partner after France. In the first half of 2011, exports to China went up by 25.2 percent in comparison with the first half of 2010, while German exports grew by a total of 14.7 percent. Germany's trade with other countries in the EU27 increased by just 13.4 percent (Figure 3).

As an export nation, Germany has managed better than other European countries to participate in China's integration into the global economy. Industrialized countries that were hit particularly hard by the global financial and economic crisis, in contrast, have had to face declines in growth, as they were not quite as successful in shifting their focus to these markets.

China has also become the most important growth market for Europe's total exports.⁵ In 2010, goods and services exported from EU27 countries to China totaled 113.1 billion euros. Despite this, the trade deficit between the EU and China went up to 168.6 billion euros last year. Thanks to Germany's increasingly important role, especially with regard to exports to China, this lopsided development in foreign trade with China is not quite as apparent.

Europe exports mainly machinery and vehicles (approx. 60 percent of all exports in 2010), as well as chemicals and raw materials. The main imports from China, in contrast, are textiles and ICT products. In the latter sector, China has already overtaken the USA to become the leading supplier of ICT goods.⁶

China is striving hard to catch up with the leading manufacturers of hi-tech products. Parallel to this, the development and expansion of infrastructure in the country has resulted in showcase projects which will form the basis of future export strategies. In particular, the development of a high-speed rail network has swallowed up more than 300 billion US dollars in the past four to

⁴ M. Kaelble, "China steigt zum viertgrößten Exportmarkt auf," Financial Times Deutschland, November 11, 2011.

⁵ Eurostat: "EU/China Summit / Strong increase in EU27 exports to China in the first half of 2010 / China now the second-largest trading partner of EU27," STAT/10/1475.

⁶ In 2008, China already had a balance of trade surplus for ICT products totaling 125,240 billion US dollars for a total volume of trade of 735,707 billion US dollars. The USA, in contrast, had a balance of trade deficit of 112,933 billion US dollars for a total volume of trade of 460,832 billion US dollars. See OECD: OECD Information Technology Outlook. Paris: OECD, 2010.

five years.⁷ This industrial policy brings about an ever increasing need for raw materials. Furthermore, Germany and China, and even Japan, could be put under increasing pressure from deficit countries around the world, especially the USA, to reduce their surpluses to a greater extent (Figure 4).

... Yet Growing Risk from Tension in Economic Relations

With the development and expansion of its own capital goods industry, China can be expected to pose stronger competition for German industry in the future. China is putting huge efforts into the development of a domestic innovation system that will help it take on a leading international role in this field by 2020.⁸

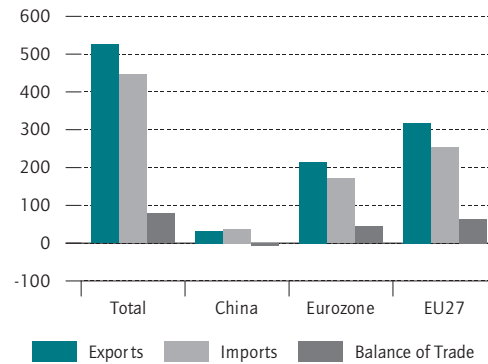
Finally, with the help of affordable exports, China has managed to increase its global market share hugely, especially in the area of photovoltaics (PV), with Germany's global market share for PV products having fallen from 69 to 21 per cent since 2004. In the same period, China's share increased from 7 to 45 percent.⁹ This has led to trade tensions with China over the significant turnover losses that German PV manufacturers have suffered as a result. The company SolarWorld, for example, filed an official complaint with the WTO about China's dumping practices.¹⁰

On the other hand, trade barriers hinder the export of wind power units to China, with government contractors giving local manufacturers such as Sinovel or Xinjiang Goldwind Science and Technology priority when

Figure 3

Germany's Foreign Trade with China, the Eurozone, and EU27 in the First Half of 2011

In euros (bn)

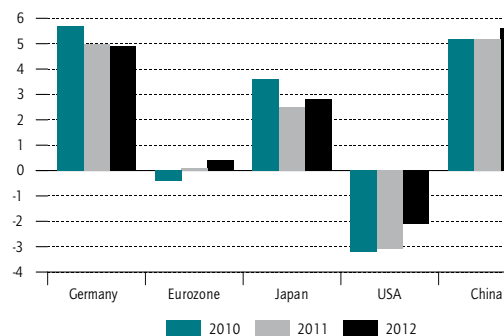


Source: destatis, calculations by DIW Berlin.

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Figure 4

Balance Net Totals in Proportion to GDP in percent



Source: IMF, WEO September 2011.

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⁷ High-speed trains have been running for four years now across a total of 8,400 km of railroad. The last high-speed rail link to be opened was Beijing-Shanghai. This is to be expanded to approx. twice its distance. Unfortunately, developments in this area are not entirely problem-free. See X. Yang, "Störfall im Harmonie-Express," Spiegel Online, July 21, 2011. This led to the need for substantial additional investments. See X. Dingding and W.Yong, "\$31 b govt stimulus to revive railway projects," China Daily, November 2, 2011. China is, however, planning to continue exporting this technology worldwide, thus constituting direct competition to German ICE high-speed trains.

⁸ H. Hagemann, J.P. Christ, R. Rukwid, and G. Erber, Die Bedeutung von Innovationsclustern, sektoralen und regionalen Innovationssystemen zur Stärkung der globalen Wettbewerbsfähigkeit der baden-württembergischen Wirtschaft. Hohenheim: 2011; G. Erber and H.Hagemann, "Die Rolle staatlicher Institutionen in asiatischen Innovationssystemen," Vierteljahrshefte zur Wirtschaftsforschung 77 (2) (2008): 95-112.

⁹ F. Groba and C.Kemfert, "Erneuerbare Energien: Deutschland baut Technologie-Exporte aus," DIW Wochenbericht no. 45 (2011).

¹⁰ At the same time, the International Trade Commission of the US Congress sustained a complaint filed by SolarWorld on December 2, 2011, ruling that punitive duties and anti-dumping sanctions be imposed on both parties; "China Rejects U.S. Trade Ruling That Solar Imports Harm Industry," Bloomberg News, December 4, 2011.

allocating contracts.¹¹ Owing to the massive subsidizing of wind power technology in China, the UN has already stopped subsidies from industrialized nations via the Clean Development Fund. What is more, accusations of industrial espionage have been made towards Chinese enterprises such as the wind turbine manufacturer Si-

¹¹ J. Niewöhner, "Repower zieht sich aus chinesischem Windmarkt zurück," Green Financials, October 25, 2011.

novel.¹² Finally, tensions have increased over China's price and export policy for rare earths, where China currently has a quasi-monopoly.¹³

In connection with this, co-operation between government, businesses, banks and the state-owned Assets Supervision and Administration Commission (SASAC) is crucial, the main aim being to gain competitive advantages on the global markets through targeted industries and technologies, as well as to protect the domestic market.¹⁴

Instrumental in this is offsetting losses in expansive market penetration strategies pursued by Chinese state-owned enterprises (SOEs), a process that involves the state-controlled banking system.¹⁵ Around half the value added (VA) of the Chinese economy outwith the agricultural sector is state-controlled, either directly or indirectly. Additionally, the government often forces foreign firms into joint ventures with public enterprises or state-controlled businesses in China.

The other half of China's VA comprises private enterprises which are financed largely by a shadow banking system, since access to state financial institutes is very difficult.¹⁶

Most of Germany's direct investments in Asia are made in China...

German businesses have increased direct investments in China hugely since China opened up its markets to foreign investment, almost reaching the 25 billion euro mark in 2009 (incl. Hong Kong). Activities in Japan, in contrast, are far lower at just 8.4 billion euros (Figure 5).

¹² K. Hille, G. Dyer, and F. Harvey, "UN halts funds to China wind farms," Financial Times, December 1, 2009; K. Werner, "Industriespionage wirbelt Windindustrie durcheinander," Financial Times Deutschland, September 22, 2011.

¹³ H.G. Hilpert and A.E. Kröger, "Chinesisches Monopol bei Seltenen Erden: Risiko für die Hochtechnologie," DIW Wochenbericht no. 19 (2011).

¹⁴ In the latest 5-year plan which was passed by the National People's Congress in March 2011, seven strategic emerging industries (Clean Energy Technology, Next-Generation IT, Biotechnology, High-End Equipment Manufacturing, Alternative Energy, New Materials, Clean Energy Vehicles) are named. See J. Casey and K. Koleski, (2011): Background: China's 12th Five-Year Plan, U.S.-China Trade and Security Review Commission, One Hundred Twelfth Congress, Washington D.C.: June 24, 2011.

¹⁵ G. Ferri and L.-G. Liu, "Honor Thy Creditors Before Thy Shareholders: Are the Profits of Chinese State-Owned Enterprises Real?" HKIMR Working Paper no. 16/2009, Hong Kong: Hong Kong Institute for Monetary Research, 2009.

¹⁶ A. Szamosszegi and C. Cole Kyle, An Analysis of State-owned Enterprises and State Capitalism in China, Washington D.C.: U.S.-China Economic and Security Review Commission, October 26, 2011.

Figure 5

Germany's Direct Investments¹ (Assets) in China, Hong Kong, and Japan

In euros (bn)



¹ Direct investments not incl. indirect investments via dependent holding companies.

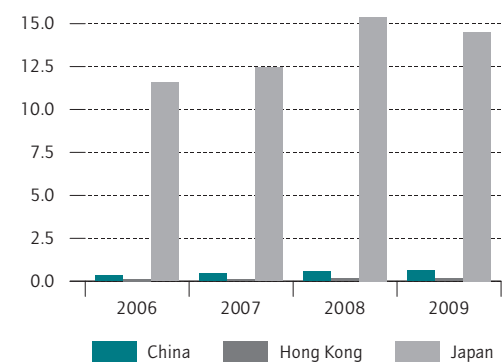
Source: Deutsche Bundesbank.

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Figure 6

Direct Investments¹ (Assets) by China, Hong Kong, and Japan in Germany

In euros (bn)



¹ Direct investments not incl. indirect investments via dependent holding companies.

Source: Deutsche Bundesbank.

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re 5).¹⁷ Up until now, the increase in direct investments was complementary to the expansion of exports: even the relocation of many production sites from Germany to China did not cause export figures to drop.

¹⁷ Deutsche Bundesbank: "Bestandserhebung über Direktinvestitionen," Statistische Sonderveröffentlichung 10, Frankfurt am Main, April 2011.

... Yet China's Direct Investments in Germany Have Remained Minimal to Date

Unlike the increase in German direct investments in China, China's direct investments in Germany have been very poor so far, totaling as little as 0.8 billion euros in 2009 (Figure 6). This may change in the future, however, as China, in the course of industrialization, continues to develop its own marketing and sales, as well as repair and maintenance networks on foreign markets. In the ICT sector, in particular, Chinese firms such as Lenovo, Huawei or HTC are increasingly moving towards direct product sales in Germany. The creation of brands with global recognition calls for the establishment of offices in Germany and in the eurozone. So far, Germany has not been a particularly attractive production location for Chinese businesses. The need for technologies which have not been part of the Chinese portfolio up until now, however, will mean that the takeover of SMEs will become increasingly important, although this could also result in problems relating to competition law. The establishment of a joint venture between the state chemicals corporation Sinochem and the Dutch company DSM, for instance, was scrutinized by the EU competition authorities.¹⁸ The joint venture was approved in the end; however, this is a prime example of the legal and regulatory obstacles in the path of future takeovers and mergers between Chinese and European companies.

Conclusion

For economic cooperation to continue to be successful, suitable specialization patterns for intra-industrial trade which profit both sides are needed. This must not, however, result in cut-throat competition in the key business fields, as seen in the areas PV, wind power or high-speed trains. Partnerships in those areas where no direct competition exists would also be of interest. Especially the latent trade conflict between the USA and China ought to be a cautionary example of the fact that sustainable economic cooperation requires a fair balance between the economic partners and must be equally beneficial to both sides. This includes, in particular, a relatively even trade balance in order to rule out the risk of balance of payments crises. Furthermore, technological transfer based on the preservation of intellectual property rights must be as non-discriminatory as possible in both directions.

China's status as a developing country, as set down in international aid programs, has to be re-assessed. China has sufficient means to finance its high-tech development strategy independently. Furthermore, to ensure tension-free trade, it is important that the very nature of Chinese strategic industrial policy does not result in severe competitive distortions.

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Keywords: Germany, China, economic relations, trade and foreign direct investments

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¹⁸ "Of Emperors and Kings-State Capitalism in China," *The Economist* November 12, 2011.

Discussion Papers Nr. 1190/2012

Frank M. Fossen, Martin Simmler



Differential Taxation and Firms' Financial Leverage: Evidence from the Introduction of a Flat Tax on Interest Income

Tax competition for the mobile factor capital has led to a trend in many countries to levy lower taxes on interest income, often introducing differential taxation between interest and business income. In this study, we analyze the effect of such differential taxation on the debt ratio of firms. We exploit a 2009 tax reform in Germany as a quasi-experiment, which introduced a flat final withholding tax and opened a gap of 18 percentage points between the tax rate on income from unincorporated businesses and the new lower tax rate on interest income. We apply a regression adjusted semi-parametric difference-in-difference matching strategy based

on firm level panel data. In addition, we implement a more structural approach with a tax rate differential, taking into account its endogeneity by using instrumental variables. The results indicate that firms increase their leverage when the tax rate on interest income decreases, albeit to a small degree.

JEL-Classification: H25, H24, G32

Keywords: Income taxation, capital taxation, financial structure, leverage, matching

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