

Paper for the Ninth Forum of the World Association for Political Economy
WAPE

Hanoi May 14-26 2014, Vietnamese Academy of Social Science

Josef Baum

Industrial economist and geographer

Institute of East Asian Studies, University of Vienna

Josef.baum@univie.ac.at www.josefbaum.at

**(RE)INDUSTRIALISATION AND ENERGY IN EUROPE AND USA -
ARE CHEAP FOSSIL FUELS COMPARATIVE ADVANTAGES?**

In the times of financial exuberance and creating money by money - productive labour and manufacturing has been almost stigmatized, at least disrespected; the labour value theory of the old classics was at least smiled at.

Because of better performance for countries with a bigger industrial sector during the financial crisis and the dimensions of China's industrialisation and its implications there is some comeback for the importance of manufacturing and industrial activities in OECD-countries. After a period of overestimating the financial sector the key function of industry for a national economy Currently is restressed again. Industrial policy again is somehow on the political agenda – but with very different approaches.

Basics of dimension of the industrial sectors are: share of manufacturing 2012 in Germany 22,3 %; Greece: 9,7; Spain 13,3; Italy 15,5; France 10,1 (2011); Austria 18,7, Portugal 14,3; UK 10,7; EU-15 14,9; Euro area (17) 15,8; EU27 15,3.¹ The trends since 2000 are similar in USA and Europe, decreasing shares of industrial activities, sharp decreasing 2008/9 then some recovery.²

We remember that the fundamental change in the energy basis was one of the essentials of the industrial revolutions. The transformation to fossil fuels was a main source of a multiplication of productivity of labour. (An unintended side effect was the enforcing of climate change). So we are in the very centre of main global problems.

For the moment at least in some European countries there are big discussions on (re)industrialisation. The immediate reasons e. g. are investment decision of European capital groups not to invest in Europe but in the USA

The case of the Voestalpine investment in Texas – cheap energy....

¹Aiginger Karl (2013): The "Greening" of Industrial Policy, Headwinds and a Possible Symbiosis. WIFO Working Papers, No. 450. P.3

²Aiginger Karl (2013) P.6

The initial point of the following paper is the investment of a direct reduction steel plant in Texas by the Austrian steel and technology company Voestalpine.³ The company stated that it will import basic products from this plant to Austria.

- This company is the biggest industrial company in Austria with about 46000 employees and also a relevant player within the European steel industry. In a current discourse wages, energy prices and environmental regulation are blamed for not doing this big investment in a European region. This case is also a cause of complaint for industry lobbies to bemoan deindustrialisation and to model Europe on the alleged reindustrialisation of the USA.

Three main reasons for this investment are cited by Voestalpine-CEO Eder: **low energy prices, lower wages and lower prices for land**⁴. - The company states that wage costs in southern US-states are $\frac{3}{4}$ of Austrian wage cost allegedly at same productivities.⁵

But **what's new about those three arguments in a longer view? Not much:** Energy prices, especially oil and oil products have been significantly lower in the USA for a long time. Industrial wages rates per hour are significantly lower in the USA in relation to a lot of EU-countries like Germany at least since the nineties. And because of much more available land pc in the USA basically land for industry uses basically is cheaper.

And the burden by climate policy induced payments for the company are almost peanuts in relation to the **high profit rates** of the company – the profit rates could be kept high also in times of crisis because of the possibility to enforce high prices for higher quality, despite the significant profit decrease in the whole industry.

... or deregulation and global capital accumulation

So for the case of the Voestalpine investment in the USA there are some more indications for the necessity of an alternative view:

The **austerity policy in the EU restricted the demand** in the EU for many years, so the internationalization strategy of this company was intensified. The orientation on high quality products, the high share of special steel, a big metal engineering division and relevant positions in downstream sectors especially in the automotive and consumer goods industries and also in the oil and gas industries aggravated this tendency.

³ <http://www.voestalpine.com/group/en>

⁴ Kurier 14.9.2013

⁵ Wiener Zeitung, 22.10.2013

It has to be noted that when the world financial and economic crisis 2008 downscaled the steel production in Europe the Voestalpine company interrupted an enormous investment process at the Black Sea although it had finished the planning for a complex plant with somehow almost duplicating the current steel production of near to 8 million t. – This was a much bigger dimension than the current US investment with some \$550 million.

Obviously the **direction of internationalization changed** by implications of the crisis although the dimension of the investment in the USA is only a small fraction in comparison to the former planned investment at the Black Sea: To the own shareholders the company communicates: the „strategy is characterized by strong internationalization efforts focusing on increased growth in both North America and Asia“.⁶ In particular Voestalpine obviously is orientated to the automotive industry (29 % of the turnover currently is connected with automotive industries⁷) with the huge Chinese market perspective and the restructuring in the USA. By 2020 the company wants to have 40 % of turnover outside of Europe (now 26 %)⁸.

Last but not least it should be mentioned that the Voestalpine after 1945 was nationalized and in this form central for the recovery and development of the Austrian economy altogether with a high degree of innovation, and also in particular within a complex system of state monopoly capitalism by numerous connections and control relations to this public enterprise for the regaining strength of private capital groups. In the 1980s the public structure was blamed for losses although globally the steel industry had many problems independently of the ownership structure. It was privatized and downsized, and changed the paradigm of accumulation.

So the background music of the mentioned investment challenging high energy prices, high wages and environmental regulation, **threatening with no further investments in Europe and evoking a deindustrialisation of Europe can be relativized and put into the comprehensive perspective of further deregulation and redistribution to capital.** More generally this investment can be seen more stringently in a broader view of global capital accumulation

- Not only from a socio-ecological view this orientation on automotive industries with ripe products and markets bears some **risks**. Furthermore if we look on another important European player in the steel market, ThyssenKrupp, with the trial of a big jump on the markets of North and South America we see tremendous losses with big investments in the USA and Brazil.

⁶ <http://www.voestalpine.com/group/en/press/southeastasia/>

⁷ Voestalpinebusinessreport (Geschäftsbericht) 2012/13. P.35

⁸ Der Standard 22.10.2013

Re-industrialisation in the USA on the basis of cheap energy and lower wages ?

But what about paradigm of re-industrialisation in the USA? There are some indications for a changing situation: After the crisis there is a resurgence of American auto manufacturing. Walmart announced more domestic procurement. Companies like Motorola and Apple are planning new plants in the USA. - Are new productive plants surprising significant changes?

Willy Shih from Harvard Business School 2012 who wrote the important book together with Gary. P. Pisano “Producing Prosperity: Why America Needs a Manufacturing Renaissance” currently accentuated a differentiated view:⁹

Basically he stresses the relation of the ability for real innovation and a manufacturing sector, and for the USA high losses of “**industrial commons**”, which are infrastructure, trustful relations to suppliers and customers, and webs of human resources, specialized skills and experience and education facilities. Furthermore the USA is facing the situation that complete supply chains were outsourced and cannot or only hardly be brought back selectively.

As a most important background Shih analyses the fast increase of wages in China in the last ten years (some tripling¹⁰, but still at a general low level) and a stagnation or also some decrease of industrial labour costs in the USA. After former substitution of capital by labour (what was done automatically outside of China then was done by hands in China because of cheap labour) the wage push has resulted in a tendency for **re-automatization and re-capitalization** of production in China . So there remain less advantages for outsourcing to China but there are still relevant advantages to produce further in China, especially “**flexibility**” of the labour force to produce huge quantities within a short time (the standard example is the production of millions of iPhone 5s within a short deadline), and the existence of “industrial commons”.

There are further “increasing coordination costs of offshore manufacturing” (Shih), one striking example is the increase of **transportation costs** especially caused by increasing oil prices which stayed high after a small irruption also in the years of crisis. Another important factor is the **appreciation of the Chinese currency**.

The implications of this various trends are that roughly in a net view there will not be more outsourcing from the USA to China (“**end of labor arbitrage**”) but there will also not be a considerable net re-sourcing to the USA.

The **crisis changed many parameters for capital in the USA**. The companies could use the crisis conditions to accomplish far-reaching “cost saving”

⁹Shih Willy (2013): The Re-industrialization of the United States? WirtschaftspolitischeBlätter 2/2013. P.297-312

¹⁰Consistentwith ILO, Global ,Wage Report 2012/13, Geneva 2012

programmes and deepen “**lean production**”. Many companies e. g. in the industry of component suppliers of the automobile industry closed down completely. New ones (in the south of the USA) started with much lower wage rates. In the remaining auto industry there has been a ”restructuring of the labour agreements that allowed the hiring of new workers of lower wage tier roughly half that of veteran workers”¹¹. Generally in the field of labour relations this resulted in “comparatively high labour flexibility” (Shih) and lower or constant wages.

Lower wages can support companies do get higher market shares do not increase welfare.¹²

Re-localisation and stabilization of the industry share in the USA

New investments in the USA preferably are made in southern “**low cost states**” (Shih) with lower wages (a low degree of union organizing and a smaller degree of regulation): see Volkswagen in Tennessee; AREVA, Lenovo and Siemens in North Carolina; Continental and Boeing in South Carolina; General electric in Kentucky; Texas with a lot of petrochemical manufacturing.

For the **Euro-area** Shih indicates **hourly compensation costs in manufacturing for 2011 of \$ 43.2, for the USA \$ 35.5**, with very different changes since the years around 2000: for 2011 this wage rate has reached 202 % of 2000 for Euro-area, and 142 % for the USA. Generally known there are big differences within the Euro-area: for **Germany** the hourly compensation costs in manufacturing for 2011 is **\$47.4**; for Austria \$43.2, France \$42.1, Portugal \$12.9, Spain \$28.4; Switzerland \$60.4.¹³

-And it should be remembered that in the USA and in European countries there is an increasing low wage or least wage sector¹⁴.

Hence **Shih concludes that in contrast to USA for Europe there is still significant potential for outsourcing to China**¹⁵. But this is not fully conclusive because not the wage rates but the total costs are relevant.

After analysing the last decade - “Over the last decade US manufacturing has grown much more productive and competitive by taking costs out... with

¹¹*Shih Willy (2013): The Re-industrialization of the United States? Wirtschaftspolitische Blätter 2/2013. P. 302. See also Presse 20.7.2013. P2*

¹²Bruckbauer Stefan, Bank Austria. Kurier 7.9. 2013

¹³*Shih Willy (2013): The Re-industrialization of the United States? Wirtschaftspolitische Blätter 2/2013. P. 312. Based on the US-Bureau of labour statistics.*

¹⁴Bruckbauer Stefan, Bank Austria. Kurier 7.9. 2013

¹⁵*Shih Willy (2013): The Re-industrialization of the United States? Wirtschaftspolitische Blätter 2/2013. P. 306*

minimal net employment growth (and more often employment shrinkage”¹⁶ - the **crucial point in Shih’s analysis** then are the **projections of employment and output for the US industries**¹⁷: In this calculation the number of industrial employment went down from 17.26 million (2000) to 11.52 million (2010) and will stay at 11.45 in 2020 during simultaneous “significant productivity increases”- and revenue (and profit) growth.

As expected different industries perform differently. Significantly **more employees** are projected in US-industries of **plastic products, wood products and metal manufacturing**.

Energy intensities in industries

	1,000 €	1,000 €	Share of total costs in %
Top 10 Energyintensive industries	25175184	2500279	11.0
23.3 Manufacture of clay building materials	76274	16104	21.1
23.5 Manufacture of cement, lime and plaster	395046	76998	19.5
24.1 Manufacture of basic iron and steel and of ferro-alloys	8021441	1152796	14.4
20.1 Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms	2219224	279681	12.6
23.2 Manufacture of refractory products	327702	32119	9.8
17.1 Manufacture of pulp, paper and paperboard	3995564	381406	9.5
23.6 Manufacture of articles of concrete, cement and plaster	1468092	93134	6.3
23.1 Manufacture of glass and glass products	1107602	67132	6.1
13.1 Preparation and spinning of textile fibres	221043	11708	5.3
19.1+19.2 Manufacture of coke oven products and of refined petroleum products	7343196	389201	5.3
Low 10 Energyintensive industries	17352694	172862	0.5
27.1 Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus	5034615	34222	0.7
28.3 Manufacture of agricultural and forestry machinery	1294086	8986	0.7
28.4 Manufacture of metal farming machinery and machine tools	988306	6679	0.7
29.1 Manufacture of motor vehicles	7282520	52690	0.7
26.2 Manufacture of computers and peripheral equipment	71314	406	0.6
26.3 Manufacture of communication equipment	260017	1540	0.6
30.9 Manufacture of transport equipment n.e.c.	514166	2589	0.5
15.2 Manufacture of footwear	271963	1015	0.4
30.2 Manufacture of railway locomotives and rolling stock	1115951	3440	0.3
26.6 Manufacture of irradiation, electromedical and electrotherapeutic equipment	519756	1295	0.2
Resource intensive industries ²	38549372	2460481	6.4
Engineering industries ³	34071129	302218	0.9
Total industries	114987493	4072040	3.5

1) Share as percentage of total production. - 2) NACE 16, 17, 18, 19, 24, 32, 38. - 3) NACE 27, 28, 29.

S: Statistik Austria.

Source: Aiginger Karl (2013): The "Greening" of Industrial Policy, Headwinds and a Possible Symbiosis. WIFO Working Papers, No. 450. P.11

Only four industries basically have energy costs of 10% of total costs, for the majority of industries the energy costs are between 1% and 2% of total costs¹⁸ Furthermore: “Empirically carbon leakage is limited by the fact that energy intensive industries are very capital intensive too and do not relocate quickly”¹⁹.

¹⁶Shih Willy (2013) P. 302

¹⁷Shih Willy (2013) P. 310

¹⁸Aiginger Karl (2013): The "Greening" of Industrial Policy, Headwinds and a Possible Symbiosis. WIFO Working Papers, No. 450. P.8

¹⁹Aiginger Karl (2013) P.11

Shih concludes that the “**US-growth is more a story of labour flexibility and increasing productivity**, some improvement in factor costs and a selective return of demand”²⁰

Out of this analysis the **re-industrialisation in the USA is a re-localisation within the USA and stabilization of a relative low grade of industrial share**²¹

Different perspectives of the economic relevance of fracking

So anyway the “re-industrialisation” is relevant for industries where industrial commons still exist like technology intensive goods – and for some industries where lower gas prices are **one** factor.

In North America in the last years the enforcing of „**unconventional**“ fossil fuels (fracking -shale gas, also tar sands) had significant effects to energy markets resulting in lower gas prices. These tendencies often are claimed to be most important sources for a new industrialisation in the USA.

At 2000 the prices for gas were similar for EU and USA, electricity was even cheaper in the EU, then there had been high increase in prices until 2008. Then the US prices for gas have fallen to one third of their peak whereas staying high in Europe. So 2012 there was a spread of about 1:4. This recently provoked spill over effects. “Coal prices decline as a consequence and the US starts to export coal to Europe.”²² Electricity prices since some years has differed almost 1:2.

There are very different evaluations about the perspectives of fracking – which will not be discussed here. Also the huge environmental implications shall only be mentioned

From a logic of markets the current low gas prices in the USA will increase because of substitution and higher gas demand. Shih doubts that the “**price spreads we see today can endure market forces forever**”.²³ Another strand of arguments stresses probably increasing costs after having exploited best available shale gas.

From a climate policy view fracking is some extension of the fossil era and it would make more sense to invest directly in renewable energy.

The perspectives of fracking outside the USA are still more Disputed.

Irrespectively of environmental harms and costs and popular resistance here are

²⁰Shih Willy (2013): The Re-industrialization of the United States? WirtschaftspolitischeBlätter 2/2013. P. 306

²¹ See also: Bruckbauer Stefan, Bank Austria. Kurier 7.9. 2013

²²Aiginger Karl (2013): The "Greening" of Industrial Policy, Headwinds and a Possible Symbiosis. WIFO Working Papers, No. 450. P.12

²³Shih Willy (2013): The Re-industrialization of the United States? WirtschaftspolitischeBlätter 2/2013. P. 306

big doubts even if Europe or China would also start shale gas exploitation significantly whether costs could be so low as in the USA especially because of more dense population²⁴ (and water scarcity in China).

A different effective approach for a (re)industrialisation

A fundamental issue is the question whether cheap fossil fuel or better energy efficiency and the development of renewable energy are relevant for “competitiveness” in the short or the long run.

Here it will be reasoned further whether there are alternative effective approaches for a (re)industrialisation or at least for a stabilization of industrial activities. We repeat: The discourse under the label (re)industrialisation²⁵ often is a discourse of deregulation, flexibilisation, redistribution to capital and massive opposition to an effective climate policy. Even the EU energy commissioner Oettinger defined “the problem” of Europe in this context by having 7 % of population but (alleged)50 % of global social benefits.²⁶

- The opposition of energy intensive industry groups to the moderate real climate policy until now has accomplished so much exceptions (certificates for free up until 2020, "policy capture") that also the European market orientated modest carbon trade system not only does not work but creates windfall profits

But could “Re-industrialisation” basically work on the basis of cheap energy and lower wages? And **which industrialisation?**

In the following **one** main useful thread of argumentation shall be expound differentially from the current EU-funded project “WWWforEurope” but which is all in all based on limited tenets of competitiveness, Green growth and ecological modernization.

“It makes sense for the US to close its current account deficit by ‘re-inventing manufacturing’. But it may even be problematic for a resource-rich country like the US to base the rejuvenating of its industry on low energy costs. For resource scarce Europe this holds even more.²⁷. Starting point is: “Manufacturing in

²⁴ Presse 18.9.2013

²⁵ www.geht-doch.com (a campaign by the Austrian Association of Industry – Österreichische Industriellenvereinigung)

²⁶ Presse 27.9.2013. P.18

²⁷ Aiginger Karl (2013) P.17

Europe consequently had few incentives to specifically invest in energy efficiency or to change the energy mix“.²⁸

“The optimal answer of Europe to the lower energy costs in the US should be in general to increase investment into innovation and education and specifically to increase energy efficiency and innovations in ultra low carbon technology.”²⁹

So US cost advantage in energy could be matched by closing the technology deficit, improving skills and going for excellence in energy efficiency and clean technologies³⁰. Then the **dynamics** would be that “energy can be more expensive in Europe, if at the same time innovations in energy efficiency and innovation and education in general become cheaper and more efficient. In the long run technological progress - together with the speed of diffusion of the best technology – is the true deciding factors as regards the dynamic effect of emissions”.³¹ **Diffusion of best technologies should be encouraged in international trade and investment agreements.**³²

Some background for this strategy is that Europe has a competitive advantage in clean technology. Energy efficiency is relatively high, and Europe has a trade surplus in technology driven industries.³³

The Eurozone, EU-15 as well as EU-25 have no deficit in the current account and its manufacturing sector is larger relative to GDP:³⁴

Whereas the USA in technology driven and engineering industries exhibits deficits in the trade balance the EU exhibits significant surpluses. Moreover the **EU contrasts generally with very positive developments of the following trade balances:**

External positions of Europe and the USA

²⁸Aiginger Karl (2013) P.10

²⁹Aiginger Karl (2013) P.13

³⁰Aiginger Karl (2013) P.1

³¹Aiginger Karl (2013) P.15

³²Aiginger Karl (2013) P.14

³³Aiginger Karl (2013) P.13

³⁴Aiginger Karl (2013) P.13

	EU				US			
	1999	2011	1999	2011	1999	2011	1999	2011
	Trade in bn €		Shares of exports		Trade in bn €		Shares of exports	
Energy intensive industries								
Exports	77.7	247.4	11.3	15.5	57.3	123.1	9.7	16.0
Imports	64.1	216.9	9.3	13.6	79.0	106.0	13.3	13.8
Trade balance	13.6	30.5	2.0	1.9	-21.7	17.1	-3.7	2.2
Technology driven industries								
Exports	252.1	530.9	36.6	33.2	280.0	246.3	47.2	32.0
Imports	250.1	436.8	36.3	27.3	371.1	424.3	62.5	55.1
Trade balance	2.1	94.1	0.3	5.9	-91.1	-178.0	-15.3	-23.1
Resource intensive industries								
Exports	76.1	192.2	11.1	12.0	50.2	76.0	8.5	9.9
Imports	72.0	198.1	10.5	12.4	121.6	116.2	20.5	15.1
Trade balance	4.1	-5.8	0.6	-0.4	-71.4	-40.1	-12.0	-5.2
Engineering industries								
Exports	365.1	767.8	53.1	48.1	379.7	367.9	64.0	47.7
Imports	328.5	580.8	47.7	36.3	490.7	576.3	82.7	74.8
Trade balance	36.6	187.0	5.3	11.7	-111.0	-208.5	-18.7	-27.1

S: Eurostat (AMECO), WIFO database.

Source: Aiginger Karl (2013): The "Greening" of Industrial Policy, Headwinds and a Possible Symbiosis. WIFO Working Papers, No. 450. P.16

The “carbon leakage” argument

The “carbon leakage argument” runs as follows: If industrialised countries and specifically Europe sets high standards or prohibit, regulate or tax emissions, production of emission intensive industries would relocate to countries with less resource efficiency, thus increasing the overall emissions³⁵.

The argument has been accepted by policy makers insofar as emission intensive industries receive permits for free until 2020.

“The argument is neither wrong in the short run, nor convincing in the long run. Actual shifts of production and the overall impact on emissions depend on strategies, innovative efforts, spillovers and policy measures”.³⁶

Again: Over the medium or longer term perspective this push towards faster innovation may dominate the static short-term loss of changing the input mix as a result of policy measures by an overall increase in total factor productivity³⁷

And the carbon leakage element is restricted to a few industries. Only four industries have energy costs of 10% of total costs. Innovation efforts for increasing resource efficiency will be dampened, and investment into clean energy will prove to be less profitable³⁸.

³⁵Aiginger Karl (2013). P.7

³⁶Aiginger Karl (2013) P.7

³⁷Aiginger Karl (2013) P.7

³⁸Aiginger Karl (2013) P.12

We need instruments for orientation

Another even more crucial problem is a kind of **leakage by the existing structure of the global supply chains**. Investments have to be seen also within global production networks and their effects on regional distribution of energy inputs within the global supply chains.

If we only measure territorial emissions, harms and costs on the usual country basis we ignore important external or societal costs

Measurement concepts like **Life Cycle Analysis (LCA)** and **ecological footprint** can give an evaluation for this and illustrate environmentally outsourcing.

We can read many nice words in EU-communications and strategies about sustainable development, but we hardly have or use efficient instruments for orientation.

A central problem is that prices currently only partly reflect social and ecological needs, and do not cover important costs and sometimes indicate wrong directions. Harms are “externalized”, for the internalization of costs, for the “right” prices anyway some regulation is necessary, at least taxes, e. g. carbon taxes.

- The problem of the fundamental measurability of social and environmental goods and bads is not discussed here; but anyway decision rules are necessary

Most central are calculations on energy efficiency in the energy production. What are the EROIs³⁹ – energy return on investment as relation of all energy input and energy output in the energy production are a good non-monetary measure for efficiency.

So it can be seen that unconventional fossil fuels (gas by fracking, tar sands) from a total energy view have a poor performance.

A further question would be the regard of financialisation.

The **dominance of short time thinking** (equivalent to a lack of reasonable planning) is an enormous obstacle for sustainability. It is based on the depreciation of future when high profit rates are dominating the development. High current profit rates mean that future values are devaluated exponentially. Equivalently to the profit rate in cost-benefit analyses future values e. g. of good water, biodiversity or climate stability are evaluated by “**discount rates**” resulting in “net present values” (NPV). When the discount rates are near zero,

³⁹ C. A. S. Hall (ed), Sustainability. Special issue. New Studies on EROI. 2013

this means only small devaluation of futures values. When the discount rates are assumed near an average profit rate (this unfortunately is usual in OECD-countries) there is high devaluation of futures values, and so a disregard of nature and services by nature.

“Curse of resources” or bad luck for big scale?

When we discuss reindustrialisation in the 21st century in Europe or the USA we have to look on the biggest industrialisation process since ever in history, which is going on just now in China.

The industrialization of China and other “emerging” countries is encountering different international circumstances. The now industrialized countries could use resources “at colonial conditions”⁴⁰. Now China has to use resources with prices much higher. This is an enormous challenge but basically does also stimulate pattern of higher resource efficiency.

The “curse of resources” somehow is valid for China as the “world’s factory” in the sense of the implications of emissions for nature and health.

But maybe there is special bad luck of unique scale of the Chinese Economy: The realization of economies of scale (mass production) and economies of scope (combined production) in a big more or less integrated home market is one “secret” of the Chinese economic development; but in the concrete current global configuration there are also disadvantages:

- Most resources which China buys and imports are increasing in price
- Most products which China sells and exports are decreasing in price

The solar case

There has been a current lawsuit by the EU along competition laws against Chinese PV producers. At the moment it seems somehow eased but altogether this is a rather strange case. For decades we waited for cheaper production of energy by the sun. In the last years finally there was a breakthrough in the costs down to one third - and the forecast is for further 30 % lower costs until 2020⁴¹- but also a sharp competition because of many new competitors in China. The EU saw the problems of European enterprises but did not look at the same

⁴⁰Wu Zongxin; World Bank, Environment & Social Development Sector Unit (EASES), East Asia and Pacific Region (2006): Circular Economy Indicators Study, Part A: The Establishment of Circular Economy Indicators in China.

⁴¹ Solarforscher erwarten weitere Kostensenkung bei der Photovoltaik. www.fona.de/de/16934

problems at Chinese companies. And even if there had been subsidies for Chinese producers would this be negative from a necessary overriding importance of climate change mitigation and promotion of renewable energy? Since many years the IEA (International Energy Agency) discloses global subsidies of about \$ 540 billion for fossil energy and only \$ 90 billion for renewable. What about this divergence? – Why can the crisis and over-capacities of the solar industry not be solved by public procurement programmes?

Anyway this case shows the narrow limitation of competition issues within the WTO framework,

“New “ or “old” industrial policy?

Instead of bad „old selective and interventionist one“⁴² the "new industrial policy" in a self-definition does „(i) support market forces instead of counteracting them, (ii) increase competition instead or favouring individual large firms, (iii) foster broad technologies instead of picking single winners, and to (iv) support long-term government targets in clean energy and health.“⁴³

By the way „industrial economics“ does not - as non-economist would expect - treat industry problems but was mainstreamed to the promotion of market processes and problems of competition. In the 90s even game theory had boarded and somehow dominated the subject.

But Europe should think on China: Although the Chinese policy is somehow more free market orientated in the sense of less oligopoly power in the markets and more real equal opportunities for SME than in the west - industry policy is also “old fashioned interventionist“ and in China industry policy stresses on public governance for selected big companies.

⁴²Aiginger Karl (2013): The "Greening" of Industrial Policy, Headwinds and a Possible Symbiosis. WIFO Working Papers, No. 450. P.1

⁴³Citing Aghion, Ph., Boulanger, J., Cohen, E. (2011): Rethinking Industrial Policy, Bruegel Policy Brief, 04/2011. In Aiginger Karl (2013): The "Greening" of Industrial Policy, Headwinds and a Possible Symbiosis. WIFO Working Papers, No. 450. P.3