

Evidence from the
Engineering and Machinery Alliance

“Fixing the Foundations”
Productivity Plan Inquiry

Agricultural Engineers Association
British Automation and Robot Association
British Compressed Air Society
British Fluid Power Association
British Paper Machinery Suppliers Association
British Plastics Federation
British Turned Part Manufacturers Association
Gambica
Gauge and Toolmakers Association
Manufacturing Technologies Association
Printing Industry Confederation
Processing and Packaging Machinery Association
UK Industrial Vision Association

The Alliance’s 13 trade associations represent 1,900+ companies, mostly in mechanical and electronic engineering, with sales of £9+ billion into the main supply chains (including automotive, aerospace, food, medicine, pharmaceutical, defence, oil and gas, offshore wind etc.), providing equipment, components and services.

We have commissioned Cambridge University Institute for Manufacturing ECS to work with us on an innovation and productivity programme to help raise company and supply chain performance. This work has provided a number of insights which inform our submission.

Summary

Our submission addresses the Committee’s questions 1-4 and then includes some additional comments in section 5.

- Broadly we agree with the assessment but UK manufacturing culture and the role of high UK property values as a competing asset for investment need to be taken into account. (1.1-3 and 2.b.11)
- Productivity is vital for competitiveness. But it is GVA growth that underpins wealth creation for society as a whole. We need to have both and while we’ve had some considerable success in UK manufacturing increasing productivity that extra GVA creation has been missing. (2.a.1-10)
- It’s really important that past lessons are learned when it comes to fostering a dynamic economy, viz policies are devised to raise productivity and increase GVA. (3.1-6)
- At this stage much of the Plan is expressed in high level terms, so comment has to be quite limited and views will depend on what actually emerges (4.1-6 and 5.1-3).
- But aspirations to reshore, to take advantage of various sectors’ significant growth plans and double exports will require some SMEs to ‘scale-up’ very quickly (i.e. 50% per annum) placing major demands on existing management teams in areas where the UK may not have a deep pool of executives with the requisite experience both in leading that sort of growth in manufacturing firms employing fewer than 250 people and also in terms of designing and delivering the financial products needed to support such rapid and sustained growth. (5.4-13)

1. Do you agree with the Government’s assessment of the reasons for the UK’s productivity slowdown (as outlined in the Annex to the Plan)? Has the Government acknowledged all of the main causes of the UK’s poor productivity growth?

Broadly agree – but more could be made of:

1. UK industrial culture and an insufficiency of big manufacturing companies, leaders in their fields (see the *All Party Parliamentary Manufacturing Group report “Making Good”*).

2. Globalisation: the advent of China, India and the former Soviet Union joining the world's labour market pretty much at the same time, increasing the world's growth potential and also offering access to low wage manufacturing and then how the UK went for lean manufacturing techniques in a big and extreme way, focusing on driving costs out of the business to compete with the low cost imports as a means to retain their contracts with UK OEMs and Tier 1s in cost down contracts, almost to the exclusion of added value (see under section 2).
3. Property as a competing asset class (see *Bringing Manufacturing Back* by M Gibson, Civitas October 2014):
 - a. Relatively low returns available from manufacturing R&D and innovation compared with the high returns from investment in UK property.
 - b. UK property prices tend to be higher than in other EU states other than Italy.

2. One pillar of the Government's Plan is to increase "long-term investment". It outlines eight areas with specific measures to increase productivity.

a. Why has the UK's long-term investment been so low up to now?

1. A key requirement alongside raising productivity will be growing sector gross value added (GVA).
2. Below we include five pieces of evidence to show how the UK is currently missing out on creating wealth that grows the whole economy.
3. Table 1 summarises the UK's position on four dimensions compared to the Netherlands compared to the EU average and best performing country. It illustrates the competitive task ahead for industry and national policy makers.

Table 1 Comparison UK industrial performance with best and the average in EU

Measure	Comparison EU top		UK compared to the EU average
	UK	Netherlands	
Total exports as % of GDP	4%	33%	Just one third of the EU average
Investment in equipment as % GDP	6%	31%	The weakest of all member states
Productivity per person employed in manufacturing	32%	40%	UK is better than the EU average (29% of top performer)
Business R&D % GDP	43%	37%	UK is worse than the EU average (51% of top performer)

Source: Re-industrialising Europe – Member States Competitiveness Report (SWD 2014/278)

4. Table 2 shows manufacturing GVA in the UK, three other EU member states and the USA for the years 1998, 2007 (the ten years before the crisis) and then 2013 (not the USA), including numbers employed by the sector and the value created per employee, all in constant national currencies according to the EU's AMECO on-line database.

Table 2 Manufacturing value added constant 2010 national currencies 1998 -- 2007 -- 2013

Country	1998			2007			2013		
	Sector billion	Nos employed millions	Per employee '000	Sector billion	Nos employed million	Per employee '000	Sector billion	Nos employed million	Per employee '000
Germany	420	7.8	54.1	545	7.3	74.9	554	7.4	74.5
Netherlands	55	0.9	63.0	70	0.8	90.6	69	0.77	97.6
France	176	3.5	52.3	217	3.1	72.3	210	2.7	80.6
UK	151	4.1	37.0	155	2.8	55.0	143	2.5	57.6
USA	1363	20.6	73.4	1879	17.2	126.3	n/a	n/a	n/a

Source: AMECO On-line ECFIN revised 5 May 2015

Note: Germany, France and Netherlands in Euros, UK in GBP and USA in USD

5. In Table 3 below we compare how each country's manufacturing sector performed in terms of creating extra wealth (GVA), employment (numbers employed) and productivity (GVA per employee).

Table 3 Manufacturing value added comparison (derived from Table 1 data) 1998 to 2007 and 2013

Country	% change 1998 – 2007			% change 2007-2013		
	Sector GVA	Nos employed	GVA per employee	Sector GVA	Nos employed	GVA per employee
Germany	+30	-6	+38	+2	+1	-0.5
Netherlands	+27	-11	+44	+1	-4	+8

France	+23	-11	+38	-3	-13	+11
UK	+3	-32	+49	-8	-11	+5
USA	+37	-17	+64	n/a	n/a	n/a

Source: AMECO On-line ECFIN revised 5 May 2015
 Note: Germany, France and Netherlands in Euros, UK in GBP and USA in USD

6. In the same '98 -- '07 period, UK manufacturing cut investment from £20 to £12 billion according to the ONS Annual Business Survey with net investment again around £12 billion in 2013.

Table 4 Whole economy gross fixed capital formation constant 2010 prices 1998 -- 2007 -- 2013 and comparison

Country	1998 Billions	2007 Billions	2013 Billions	% change 1998-2007	% change 2007-2013	% change 1998-2013
Germany	96.1	136.0	128.3	+42	-6	+34
Netherlands	20.6	26.7	26.8	+30	+0.4	+30
France	57.1	74.1	71.0	+30	-4	+24
UK	50.0	61.1	56.0	+22	-8	+12
USA	464.8	786.9	809.1	+69	+3	+74

Source: AMECO On-line ECFIN revised 5 May 2015
 Note: 1) Germany, France and Netherlands in Euros, UK in GBP and USA in USD
 2) Equipment: metal products and machinery only

7. Table 4 compares whole economy investment in metal products and machinery, which extends well beyond manufacturing investment (e.g. mining, power supply, construction, transport)
8. Conclusions on the basis of these tables:
 - a. The manufacturing sectors in Germany, The Netherlands, France and the USA all grew substantially 1998-2007 (23-37%)
 - b. In doing this they pared their workforces back by about a tenth or less in Germany, The Netherlands and France and slightly more in the USA (17%).
 - c. They were able to achieve this by investing in modern equipment.
 - d. In the UK improved productivity in terms of GVA per employee by 49%, but we only grew the manufacturing sector by 3%.
 - e. Government initiatives such as the Manufacturing Advisory Service pushing lean manufacturing techniques helped UK manufacturers improve their performance.
 - f. UK companies (in general, not just manufacturers) have tended to invest less in equipment than our competitors in Germany, Netherlands, France and the USA.
 - g. When it comes to UK manufacturers their preference overall seems to be to manage the business by tailoring the size of the workforce according to demand.
 - h. With a 37% increase in GVA and 69% in GVA per employee it is striking what a great manufacturing nation the USA is maintained by stunning investment figures for the economy as a whole (helped recently by the advent of unconventional gas recovery, including fracking).
9. Unfortunately there are no simple quantified data comparing different countries' performance when investing in advanced manufacturing and automated systems. However, there are good data that show the level of adoption of robotics in manufacturing as a whole which includes the automotive sector, which is recognised as a heavy user. We believe these numbers can be used as an indicative proxy for automation more generally. Table 5 shows the UK's position in this more 'exposed' context.

Table 5 Comparative investment in robots in industry as a proxy indicator for investment in automation (robots per 10,000 employees)

Country	1998	2007	2013
Germany	94	234	282
Benelux	42	76	122
France	45	108	125
UK	26	58	66
USA	37	75	152

Source: IFR Report and IFR Statistical Department

10. It's also worth pointing out that correlating Tables 3 and 5 (with Benelux for The Netherlands) shows that the countries with the highest robot densities didn't cut a higher proportion of their jobs than the UK did.

b. How can we ensure that the measures relating to long-term investment in the new Plan will contribute to productivity growth?

11. For a change to the UK's industrial culture, (viz. changing the aspiration from building a company to make money by selling it, to building a business for the long term added value it provides to all stakeholders -- owners, employees, customers and suppliers) requires a change in policy culture:
 - a. Long term policy framework on cross party basis
 - b. Look at market failure amongst SMEs in a wider context than simply 'information' failure
 - c. IP protection for SMEs collaborating with OEMs
 - d. In as far as it is practical, adopt a more flexible policy approach to engage on a segmented basis, by sector and by size
 - e. Work with manufacturing organisations that represent SMEs, to design programmes and market them to members
 - f. National campaign promoting the benefits of automation.

3. The second pillar of the Government's Plan is to encourage a "dynamic economy". It outlines seven areas with specific measures to increase productivity.

- a. **What are the main weaknesses of our economy, in terms of dynamism, which are suppressing our productivity?**
- b. **Do the measures introduced under the plan address those weaknesses and are they appropriate?**

1. A certain amount of wariness that past mistakes could be repeated if the relevant authorities aren't vigilant.
2. Planning freedoms: wary that beneficial action in this area re building homes can easily become mired in developers' self interest, reinforcing land and property as much better investment vehicles than the long term returns offered by investment in innovation or making things.
3. Chance to work and progress: keen to see all who want to work, actually able to get a worthwhile job, but that will require a big improvement in schools' achievements and delivery of high quality vocational training
4. Open and competitive markets: if SMEs are to grow into medium size and then larger firms that can compete on the world market, they need to be able to protect their innovations while also operating in open and collaborative ways with larger firms
5. Financial services: at the extremes it's easy to become misty-eyed or bloody-minded about UK financial services, but see 6 below for the impact round 2009.
 - a. The banks are working to re-establish their relationship with SME manufacturers.
 - b. There is more competition coming into the sector for SMEs to access.
 - c. We see the role of a good financial partner as absolutely key if SMEs are to grow into larger companies.
 - d. In our experience many companies with excellent pedigrees for growth don't want to give up ownership to outside investors seeking to make a profitable return in three to five years, which doesn't sit well with those manufacturers who are in it for the long term (i.e. 15-20 years or more).
6. Eurobarometer's *Access to Finance Report* (published in September 2009) makes some interesting comparisons between the role of the banks in Germany, France, Italy and the UK:
 - a. Banks were more involved in providing loans to business in other countries than in the UK.

Provider of most recent loan over the last 2 years:	UK	Germany	France	Italy
Bank	72	86	94	94
Private individual	14	9	1	3
Other (micro finance, government etc)	14	5	5	3

- b. While half of firms in all four countries say that the size of their loans remained unchanged over the previous six months (2009), far more UK firms reported decreases in the amounts they could borrow than in the other three countries.

Available size of loan over the last 6 months:	UK	Germany	France	Italy
Increased	10	24	14	20
Unchanged	52	54	54	55
Decreased	30	16	18	11

- c. UK firms were equally likely to use a loan as working capital or for fixed investment, whereas fixed investment dominated French, German and even Italian use. Also far more UK companies used loans to help finance R&D or training.

Use of most recent loan (over last 2 years):	UK	Germany	France	Italy
<i>Working capital</i>	57	44	20	35
<i>Fixed investment</i>	50	60	69	42
<i>R&D</i>	13	8	6	9
<i>Training</i>	10	2	1	2

4. Overall, does the Plan adequately address the main causes of low productivity in the UK (as discussed in question 1) and will it have the desired results?

1. Much of the plan's activity is at a very high level and therefore difficult to judge in those terms, e.g.
 - a. New business tax roadmap by 2016: could be very positive if it does the right things to stimulate a different, more strategic, long term, planned outlook in place of current short-termism
 - b. Endorsing various large company investment proposals: no specifics
 - c. Network of Institutes of Technology: but also breadth and depth to apprenticeships?
2. Compulsory training levy on large firms: this could be helpful if it stops large firms poaching skilled employees from 'SMEs down the road'
3. Responding to the Dowling Review could have big implications for SMEs depending on how the simplifications round R&D support are developed
4. Much of it should be helpful, e.g. infrastructure commitments
5. While setting AIA at £200,000 from January 2016 is welcome when compared with £25,000, it is an immediate reduction of £300,000 from the current rate. We reserve judgment in the hope the tax road map will show that this really is part of a tax framework that will prove very attractive to firms that want to invest.
6. The catalytic City Region policies will be welcomed by many member companies. National associations working to raise sector performance will have to find a way to work with them. This task could be made easier if there's a central information point for trade bodies to contact.

5. Additional comments

Investment

1. To attract investment in long term productive capacity, the UK has to stand out as the place to put plant that's designed to be operational for 15-30 years, where the investment environment will continue to encourage upgrading and the power costs are going to ensure UK based process plants are competitive.
2. The R&D Tax Credit is absolutely invaluable to high tech or research-based start-ups, not only helping them through the early years when they are loss making with payments that can be used on company operations but then in later years continuing to encourage innovation. Combined with the AIA at the current rate (£500,000) companies that are looking where best to place their investments find the UK a competitive option. But the reduction in the AIA to £200,000 is bound to affect that assessment.
3. Some industries suffer investment disadvantages from the current Business Rates system. Although plant and equipment per se aren't included in the rates, some industries are penalised by an increase in their rates if they invest in new operations such furnaces and overhead cranes. This equipment then represents an additional fixed cost they have to meet but that their international competitors don't, with downstream implications for their customers purchasing their goods (e.g. more expensive metals, chemicals, glass) and UK-based equipment suppliers who find that their UK customers don't invest as much as others abroad, making their home base market less competitive and maybe less innovative.

Scaling up SMEs to anchor reshoring

4. Some of the new business potential identified by the sector councils for their supply chains (e.g. £3 billion for automotive) would require very substantial bulking up by any SMEs in those supply chains, perhaps by as much as 50% per annum to deliver at the scale required. Companies growing at 20% return on capital employed aren't going to be able to fund such

growth unless there's particular financial 'scaffolding' in place to support the firm through that huge scale-up and turbulence that will be involved.

5. To achieve such dramatic scale-up in the targeted time period requires very special skills, that can really only be in the hands of people who have done it before. We certainly don't have many with such skills in the UK and we need to develop that expertise more broadly across the economy.
6. In addition, all EAMA subsectors are reporting skills shortages.
7. The only way to provide the required skills (managerial and technical) is to bring them in from outside the UK. In practice that may mean from outside the EU because every other EU member state is targeting similar objectives and seeking similar resources in the internal market.
8. This sits uneasily with the immigration goals. However, a clear system based on a statement of needs and roles to be filled, perhaps with some mentoring obligations to spread the expertise but also to give firms taking on the personnel first adopter advantage after a suitable period (say 18 months) when lessons have also been learned.

Exporting

9. The target of getting 100,000 new firms exporting by 2020 to reach £1 trillion of overseas sales is a tall order.
10. We agree that more firms need to be encouraged to export and that there is merit in making new exporters particularly welcome.
11. However, we don't see the rationale of limiting support to exporter virgins.
12. We recommend, HM Treasury 'tests' the concept of offering a tax credit equivalent to certain export sales (e.g. SMEs, one contract, new to export, in excess of £25,000; three year exporter five different countries in one year over £25,00 in each)
13. Consider setting a three-year rolling cycle of activity focused specifically on raising exports in markets agreed with business so that export partners can plan activities in line with local capital equipment procurement practice, rather than according to HMG's budgeting cycle.