Discussion Paper

Forty Years of UK Trade 1970 - 2010

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Foreword
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This discussion paper examines the UK trade performance over the last forty years using data primarily from the ONS Pink Book series. The paper covers the years from 1970 - 2010.

In 1970, I joined Tube Investments as a graduate trainee having completed a first degree at the London School of Economics. TI was then one of the largest engineering conglomerates in the UK. The first three months were spent at a technology college in the West Midlands. Welding, metalwork, machine work, pattern making and casting formed part of the training programme.

Each week I, together with eighty other trainees would visit parts of the holding company. Creda cookers, Russell Hobbs, Raleigh Bicycles, British Aluminium and Bacofoil were amongst some of the best known brands visited.

Processes experienced included, steel production, heavy tube engineering, stainless steel, exhaust manufacturing and much more. We probably watched steel being poured in what is now the lingerie section of Marks and Spencers in the Merry Hill shopping centre, the former site of the Round Oak steel works.

So much of that industry has been lost to the UK, creating a structural problem for the British economy and the balance of payments trade in goods.

Much later, 1995 in fact, I completed my PhD thesis, on the cyclically adjusted balance of payments 1980 -1992. This followed some of the interesting discussions in the 1980s with the Chancellor of the Exchequer on the balance of payments problems during the Lawson boom. This paper is in some ways an extension of the earlier thesis.

The proposition behind the research was that demand determinants of imports and exports were so strong, the balance of payments could be cyclically adjusted as is the convention with the public sector debt. Strong growth and demand in the domestic economy, will increase imports increasing the trade deficit. Conversely a slow down or recession will reduce the demand for imports and reduce the deficit.

The proposition then and now is that the price parameters particularly exchange rates changes have little effect on the demand for imports and are weaker than the demand co-efficient with regard to exports.

The recent conundrum of the depreciation of sterling and an increasing trade deficit can perhaps be better understood as a result. JKA.

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Executive Summary

The visible trade deficit will increase...

1 The report is based on an analysis of the UK balance of payments for the forty one year period from 1970 to 2010. Data is primarily derived from the ONS Pink Book series.

2 The balance of payments is one of the UK's key economic statistical series. It measures economic transactions between the UK and the rest of the world. Economic transactions include, exports and imports of goods, such as oil, agricultural products, other raw materials, machinery, transport equipment, computers, consumer goods and clothing. It also measures exports and imports of services such as international transport, travel, financial and business services.

3 In this report we deal primarily with the trade in goods, visible account. My PhD thesis was entitled "Determinants of the cyclically adjusted deficit of the UK balance of payments 1980 - 1992". In some ways the report updates the earlier work published in 1996.

4 The UK trade deficit visible goods represents a structural problem for the UK economy A simple comparison of the four decades demonstrates the decline.

In the 1970s the average annual trade deficit was	£ 2.3 bn or 2.1% of GDP
In the 1980s the average annual trade deficit was	£ 7.2 bn or 1.5% of GDP
In the 1990s the average annual trade deficit was	£15.4 bn or 2.1% of GDP
In the 2000s the average annual trade deficit was	£64.1 bn or 5.1% of GDP

5 In 2010, the deficit was £97.2 billion equivalent to 6.7% of GDP.

6 Exports and imports are modeled as a function of demand and price using either the effective exchange rate (EER) or a relative import or export price index (RIMP or REXP). As a demand proxy, for exports we use a world trade index and for imports domestic demand or total gross expenditure is used.

7 For imports, the demand co-efficients are dominant with no significant price elasticity. A change in the exchange rate will have little or no impact on the level of demand for imports.

8 For exports, the demand elasticity is less than one and the price elasticity [EER basis] is around 0.45. A demand co-efficient of 0.74 is consistent with a progressive loss of share of UK world trade down from 8% at the start of the period 1970 to around 3% by 2010.

9 Exports growth is primarily driven by world GDP and world trade. The depreciation of sterling from 2008 by as much as 25% is not reflected in trade performance. The model over predicts the realised exports from 2008 [Q1].

The reason is simple, despite the depreciation of sterling from 2008, export prices have increased by 23% in the period from 2008[Q1] to 2011[Q2] compared to an 8% increase in world trade prices over the same period.

10 The increase in export prices results from a significant increase in imported cost components as a result of depreciation, in addition exporters price to market in local and may seek to capture margin gain rather than pursue volume expansion.

11 The Pink Book analyses at the top level some fourteen categories of trade including, food, raw materials, commodities, oil, energy, semi manufactures, finished manufactures, motors, consumer goods and capital goods.

12 The UK has to import food, raw materials, commodities and energy to manufacture and export. In motors a substantial proportion of finished product is imported as components. Only in chemicals does the UK demonstrate a trade surplus over the forty year period.

13 Key export sectors for the UK are energy, engineering, automotive, chemicals, capital goods, metals and minerals. With the exception of chemicals, all have a significant import component. In 1948, the mantra was export to finance the food bill. Now the UK has to import to export. The export component of exports is significantly higher.

14 The UK has a revealed comparative advantage in four manufacturing categories ie pharmaceuticals, chemicals, healthcare and energy. In manufacturing as a whole the UK has a negative RCA (0.79) compared to China (1.12).

15 Amongst the top twenty trade partners, the UK has a positive trade balance with the USA and the Republic of Ireland. Largest trade deficits are incurred with China and Germany.

16 The UK has a structural, trend deficit in trade in goods which can be cyclically mitigated (or compounded) by a slower (or faster) rate of growth of the UK economy relative to the rest of the world.

17 The UK has a structural trade surplus in trade in services which does not offset the trade in goods deficit.

18 On a resumption to trend basis, the visible trade deficit will increase to £173 billion by 2020 approximately 7.5% of GDP. The UK share of world trade will have fallen to 2.3%.

19 The deficit is best financed by stimulation of service sector exports particularly financial services in which the UK demonstrates significant revealed competitive advantage to offset the trade in goods deficit.

Depreciation of sterling will have little or no impact on the trade in goods deficit and given the inflation impact of depreciation may even compound the problem.

...despite the depreciation of Sterling

Balance Trade in Goods

The trade in goods deficit increases...

The balance trade in goods deficit increased from £449 million in 1970 to almost £100 billion in 2010.

The early challenge for the UK was to finance the food, raw material and energy bills paid for by the surplus on manufactured and semi manufactured goods.

In 1970, the deficit in food, basic materials and oil was financed by a strong performance in manufactures. The deficit was just £19 million.

By 1980 the sector (trade in goods) remained in surplus, assisted by the recession and relative compression of demand in the UK.

Most sectors were in surplus, food, basic materials and energy were in deficit. Motor cars and consumer goods were in deficit but a healthy balance on chemicals, intermediates and capital goods meant that manufactures and semi manufactures were in surplus.

The trade sector surplus increased to £1.3 billion.

By 1985, the discovery and exploitation of North Sea oil and a strong surplus on chemicals and intermediates were unable to offset the deficit on food, materials, semi manufactures, motors, consumer goods and capital goods.

The trade in goods deficit increased to £3.4 billion.

By 1990, the oil sector, chemicals, capital goods and the "erratics" ships and aircraft were financing a food, materials, semi manufactures and manufactures bill.

The trade in goods deficit increased to £18.7 billion.

By 1995, oil, chemicals, capital goods and erratics were failing to offset the deficit in all other sectors.

The trade in goods deficit was £12 billion.

By 2000, oil and chemicals were the only sectors in surplus.

The trade deficit increased to £33 billion.

By 2005, the oil and energy surplus had evaporated, only chemcials remained in the black.

The trade in goods deficit increased to £68.6 billion.

By 2010, chemicals remained the only sector with a trade surplus.

The overall deficit increased to £97.2 billion.

By 2020, on a resumption to trend basis, the deficit is forecast to increase to £173 billion.

Balance Trade in Goods Deficit

Balance of Trade in Goods	1970	1975	1980	1985	1990	1995	2000	2005	2010
Food Beverages and Tobacco	1,321	2,645	2,282	3,723	4,616	4,369	7,752	13,048	17,350
Basic Materials	922	1,461	2,010	2,842	3,283	3,508	3,704	2,789	2,904
Oil									
Crude Oil	468	2,998	160	8,776	1,342	3,446	5,697	264	1,250
Oil Products	35	53	120	746	289	877	839	1,931	1,514
Total Oil	503	3,051	280	8,030	1,631	4,323	6,536	2,195	2,764
Coal Gas and Electricity	14	29	446	1,595	1,147	542	505	2,230	6,500
Semi Manufactures									
Chemicals	284	875	2,400	2,824	2,625	3,518	4,359	4,180	6,524
Precious Stones	64	308	594	85	97	235	710	303	2,084
Other	230	83	471	3,156	5,482	5,066	5,849	7,280	12,533
Total Semi Manufactures	450	484	1,335	417	2,760	1,783	2,200	2,797	8,089
Finished Manufactures									
Motor Cars	266	51	1,092	2,651	3,856	2,703	4,225	5,854	5,238
Other Consumer Goods	29	585	1,452	3,586	5,736	4,942	13,731	19,958	31,455
Intermediate	950	2,135	3,881	2,298	1,200	1,900	7,325	7,241	7,981
Capital Goods	924	2,002	2,650	243	1,188	1,939	775	10,902	11,020
Ships and Aircraft	16	350	112	834	722	1,252	144	854	3,256
Total Finished Manufactures	2,095	3,253	4,099	3,348	8,882	6,354	26,200	44,809	58,951
Commodities and Other	168	203	359	479	350	210	161	721	641
Total	19	3,246	1,335	3,416	18,707	12,023	32,976	68,589	97,199
Deficit adjusted for Oil	449	248	1,175	12,192	20,049	15,469	38,673	68,325	95,949

...with chemicals the only positive sector

Food, Beverages and Tobacco
Structural deficit in the sector...

In 1970, exports of food, beverages and tobacco were £505 million and imports were £1.8 billion. The UK experienced a trade deficit in this sector of £1.3 billion.

By 2010, exports had risen to £16.1 billion and imports had risen to £33.4 billion. The deficit had increased to £17.4 billion.

In the period of forty years (and before) the UK has had to import more to eat and drink, than could be generated in the domestic economy.

In 1948, the UK was urged to "export" for "We live by exports" to pay the food bill.

As with many other sectors, the deficit appears to have accelerated from the late 1990s onwards.

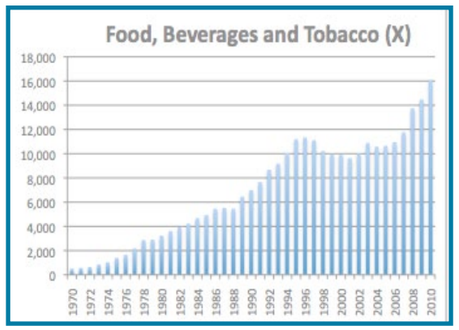
As a percentage of GDP, the deficit fell from 3% in the early 1970s to just under 0.5% by the mid 1990s.

Since then the trend decline in relation to GDP has accelerated to just under 1.5%.

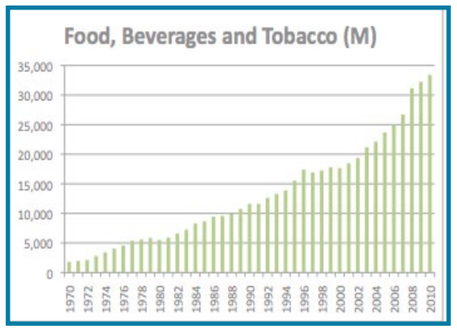
In 1970 FBT accounted for over 20% of the import bill, by the end of the period the food bill had falllen to around 10%.

By 2010, food, beverages and tobacco accounted for 6% of total exports and 9% of total imports.

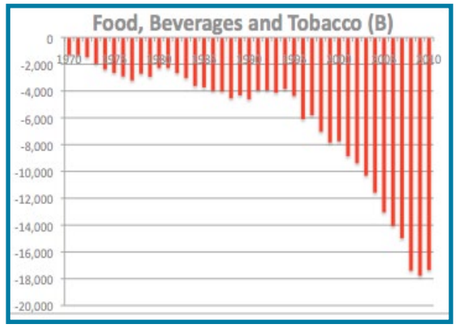
Sector Prospects
Structural deficit with an accelerating shortfall.



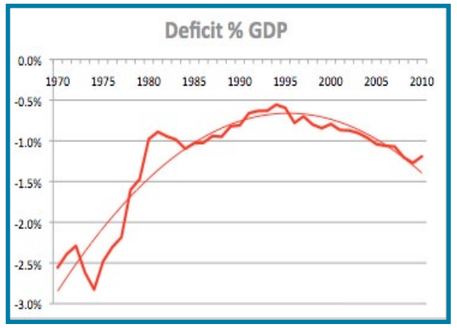
By 2010, exports had risen to £16.1 billion



But imports had risen to £33.4 billion



The deficit in food, beverages and tobacco had increased to just under £18 billion



and around 1.2% of GDP

...accelerating from the late 1990s

Basic Materials
Structural deficit ...

In 1970, exports of basic materials were £279 million and imports were £1.2 billion. The UK experienced a trade deficit in this sector of £0.9 billion.

By 2010, exports had risen to £7.3 billion and imports had risen to £10.2 billion. The deficit had increased to £2.9 billion.

Unlike many other sectors, the deficit appears to have been relatively stable with some evidence of cyclical variation and relatively slow deterioration.

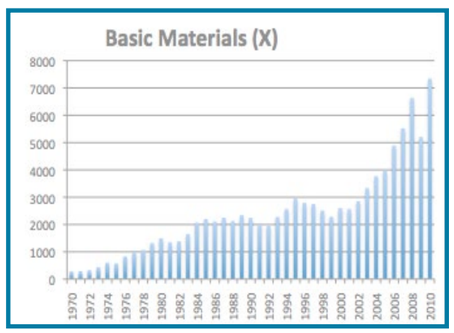
As a percentage of GDP, the deficit fell from 2% in the early 1970s to less than 0.5% by the end of the period.

Since then the trend decline in relation to GDP has accelerated to just under 1.5%.

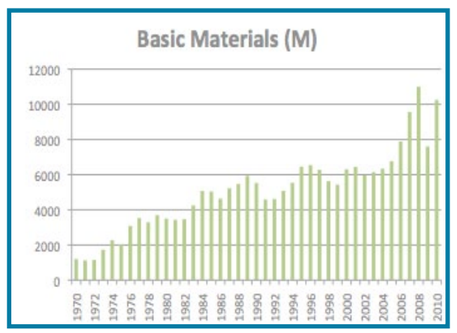
In 1970 basic materials accounted for over 15% of the import bill, by the end of the period the sector share had falllen to 3%.

By 2010, basic materials accounted for 3% of total exports and 3% of total imports.

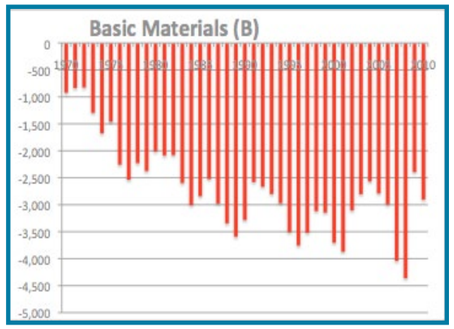
Sector Prospects
Structural deficit with moderate deterioration.



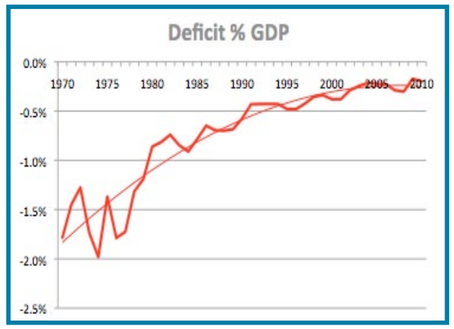
By 2010, exports had risen to £7.3 billion



but imports had risen to £10.2 billion



The deficit had increased to £2.9 billion



and around 0.2% of GDP

...with modest deterioration

Total Oil
Swings in fortune over forty years...

In 1970, exports of oil were worth £313 million and imports were valued at £816 million. The UK experienced a trade deficit in this sector of just £500 million.

By 2010, exports had risen to £32.6 billion and imports had risen to £35.4 billion. The deficit had increased to £2.8 billion.

As a percentage of GDP, the deficit fell from 1% in the early 1970s to just under 0.2% by 2010.

The sector has seen significant swings in fortune over the forty year period. The oil price rise of the mid seventies, increased the deficit to £4 billion and -4.6% of GDP.

By the mid eighties, the discovery and exploitation of North Sea Oil reserves enabled the industry to generate a surplus peaking at £8 billion (4.4% of GDP) in 1985.

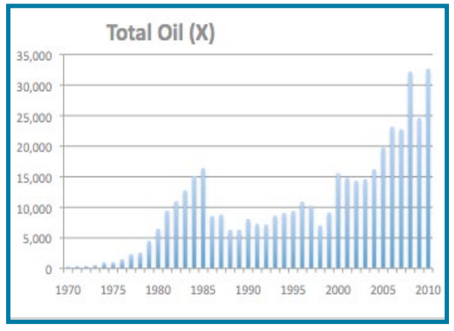
Following a cyclical slow down in the 1989, the sector returned to surplus, slowly exhausted by the mid 1990s.

Since then, although the value of exports has continued to rise, so too has the value of imports.

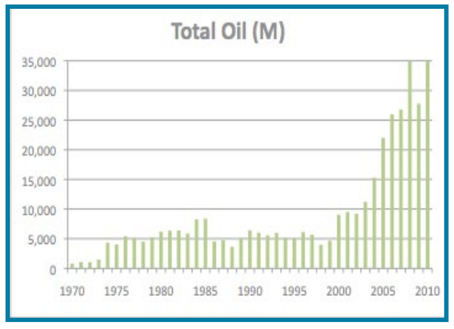
The sector deficit has averaged a deficit of £4 billion over the last four years.

Sector Prospects
Structural deficit with an accelerating shortfall exacerbated by pressure on world price levels.

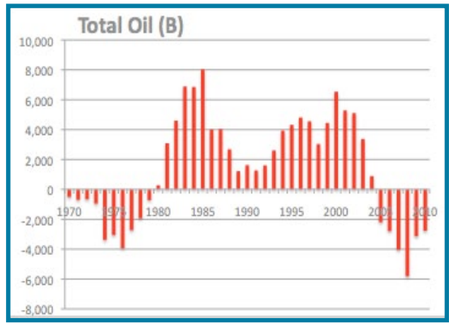
By 2010, accounted for 12% of total exports and 10% of total imports.



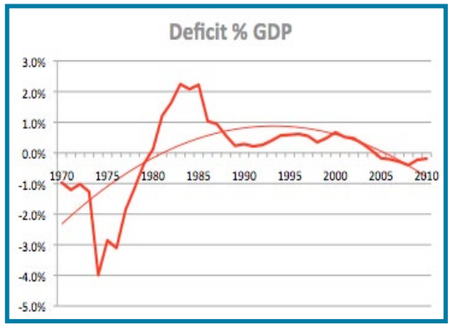
By 2010, exports had risen to £32.6 billion



But imports had risen to £35.4 billion



The deficit had increased to £2.8 billion



and around 0.2% of GDP

...but the structural deficit returns

Coal, Gas and Electricity

Energy sector in deficit...

In 1970, exports of coal, gas and electricity were worth £31 million and imports were valued at £17 million. The UK experienced a trade deficit in this sector of £14 million.

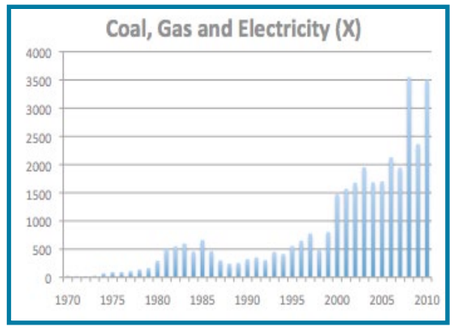
By 2010, exports had risen to £3.5 billion and imports had risen to £10 billion. The deficit was £6.5 billion.

As a percentage of GDP, the deficit was around 0.4% of GDP in 2010.

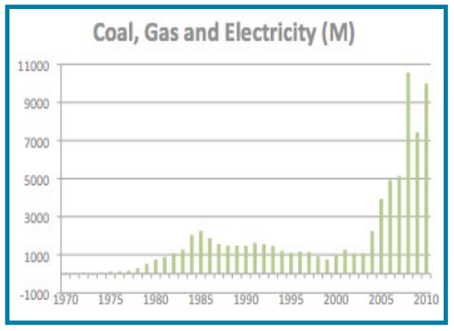
Over the last three years the sector has experienced a deficit of just over £6 billion.

By 2010, energy other than oil, accounted for 1% of exports and 3% of imports.

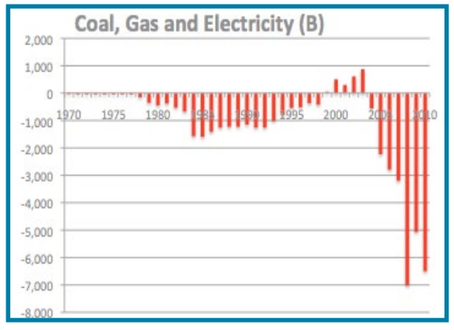
Sector Prospects
As with oil, a structural deficit with an accelerating shortfall exacerbated by pressure on world price levels.



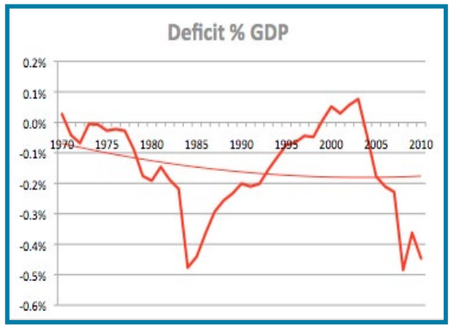
By 2010, exports had risen to £3.5 billion



and import had risen to £10 billion.



The sector experienced a deficit of $6.5 billion



At around 0.4% of GDP

...with an accelerating shortfall

Chemicals

Strong surplus in chemicals...

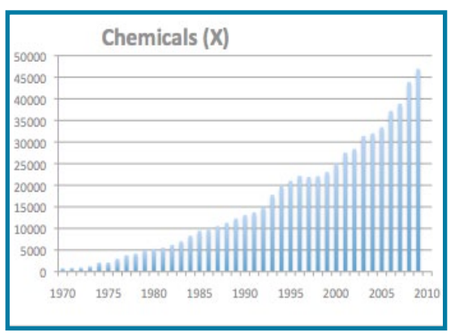
In 1970, exports from the chemicals sector were worth £779 million and imports were worth £495 million. The sector surplus was £284 million.

By 2010, exports had increased to £52.6 billion and imports had increased to £46 billion. The sector surplus was £6 billion and around 0.6% of GDP.

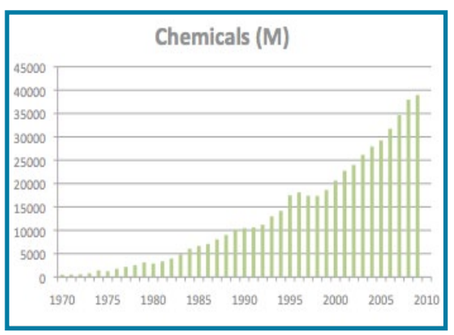
The chemicals sector is the only sector in the Pink Book classification which has consistently demonstrated a surplus in trade performance.

By 2010, chemicals accounted for 20% of exports and 13% of imports.

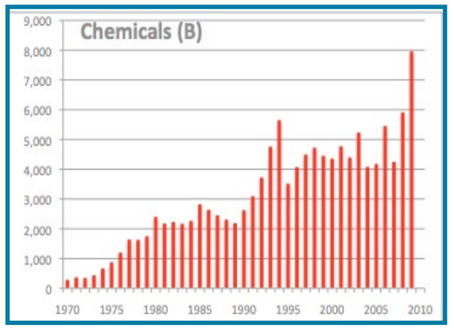
Sector Prospects
Structural surplus with strong prospects of maintaining the trend.



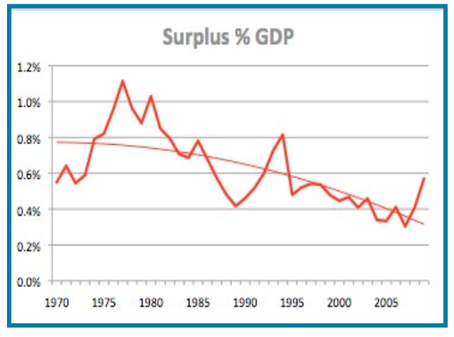
Exports have increased to £46.9 billion



And imports have increased to £38.9 billion



The sector returned a surplus of £8 billion in 2009.



Around 0.6% of GDP

...looks set to continue

Semi Manufactures

Into deficit in the 1980s boom years...

In 1979, exports of semi manufactures including chemicals were £2.8 billion and imports were £2.3 billion. The sector had a surplus of £0.5 billion.

By 2010, exports had increased to £80 billion but imports had increased to $88 billion. The sector had a deficit of £8.0 billion.

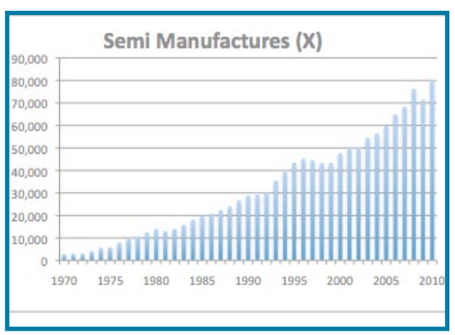
Throughout the 1970s and the early 1980s, the sector enjoyed a trade surplus which moved into deficit as the economy expanded in the Lawson boom period.

A cyclical slowdow in the early 1990s was offset by a progressive structural decline from 1995 onwards.

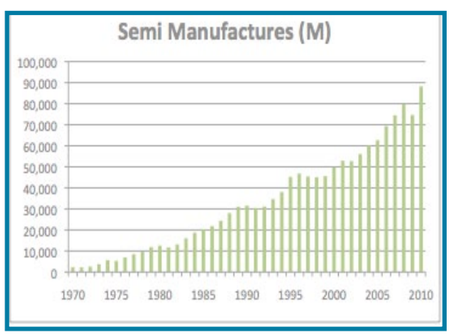
The surplus / deficit as a % of GDP has fallen from almost 1% surplus to a 0.5% deficit.

By 2010, semi manufactures accounted for 30% of export volumes and 24% of import volumes in 2010.

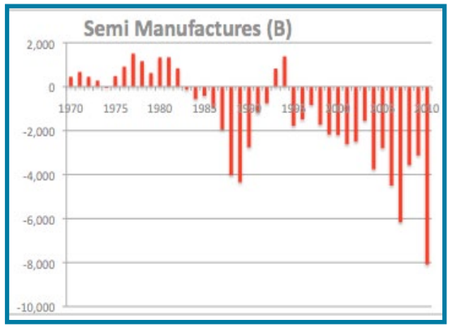
Sector Prospects
A structural deficit with an accelerating shortfall.



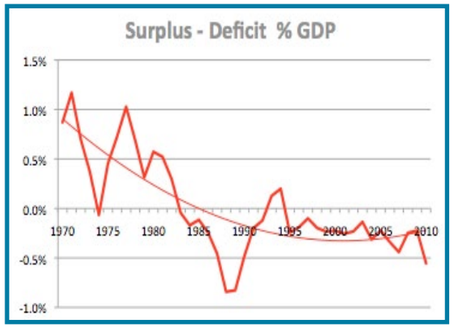
Exports have increased to £80 billion



But imports have increased to £88 billion



The deficit increased to £8 billion in 2010



At around 0.5% of GDP.

...heading for greater deficits

Motor Cars
A sector in deficit...

In 1970 exports of motor cars were £330 million and imports were just £64 million. The sector had a surplus worth £266 million or 0.5% of GDP.

By 2010, exports of cars were worth an estimated £15 billion but imports were valued at around £20 billion. The deficit as in 2008 is estimated at £5 billion, around -0.4% of GDP.

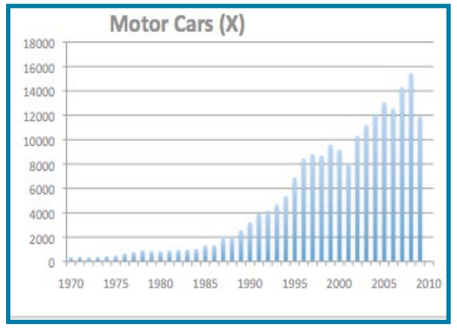
From the mid 1970s the sector experienced a progressive deficit as the economy expanded into the late 1980s.

The deficit fell in 1990 as the economy entered recession. The structural deficit has been offset in part by investments into domestic assembly by Nissan, Honda and others.

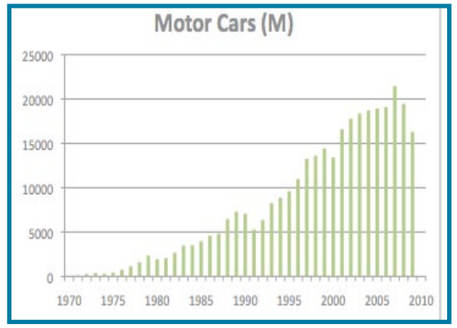
The overall trend in vehicles is masked by the headline car numbers. Imports or parts and tyres for example, (see chart 4) demonstrate a more deleterious trend.

By 2010, motors represented 5% of total exports and 5% of total imports.

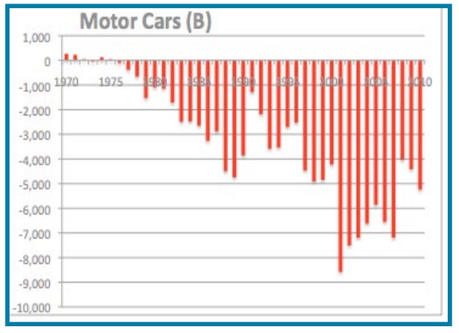
Sector Prospects
A structural deficit mitigated by domestic assembly expansion. The overall deficit in the sector is much greater when the impact of bodies, parts and tyres is taken into account.



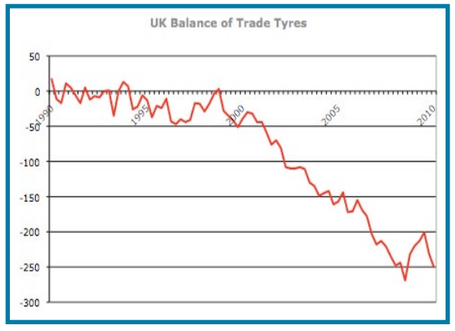
Exports of cars were worth an estimated £15 billion in 2010



but imports were worth approximately £20 billion.



The overall deficit was around £5 billion.



Car parts and tyres for example demonstrate a progressive deterioratoin.

...despite domestic assembly investment

Consumer Goods

Structural deficits emerged in the 1970s...

Exports of consumer goods were worth £579 million in 1970 and exports were worth some £608 million. The UK experienced a modest deficit in the sector of just £29 million.

By 2010, exports of consumer goods were worth an estimated £20 billion but imports were estimated at some £50 billion or 15% of total imports.

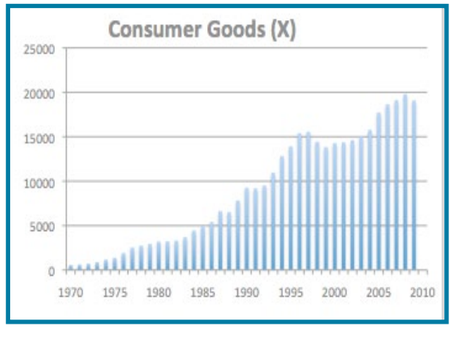
As a per centage of GDP the deficit is over 3% of total.

From the early 1970s consumer goods has been in deficit with both value level and GDP ratios in decline.

Whilst demonsrating some elements of cyclical slow down in the early 1990s, the ongoing structural and trend deficits continue.

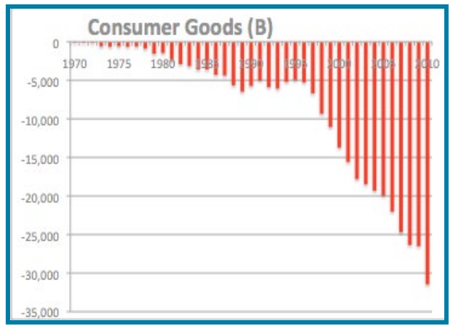
In 2010, consumer goods accounted for 8% of exports and 15% of imports.

Sector Prospects
A structural deficit with a progressive deterioration in absolute (£) and relative terms.

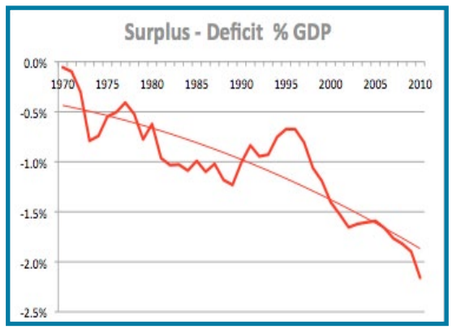


Exports are estimated at £20 bilion in 2010

but exports will hit the £50 billion level



The deficit willl be over £30 billion



almost 3% of GDP

...and will persist into the future

Intermediate Goods

The sector surplus peaked in 1980...

In 1970 intermediate goods exports were £1.5 billion and imports were valued at £589 million. The sector had a suplus trade in goods of just under £1 billion.

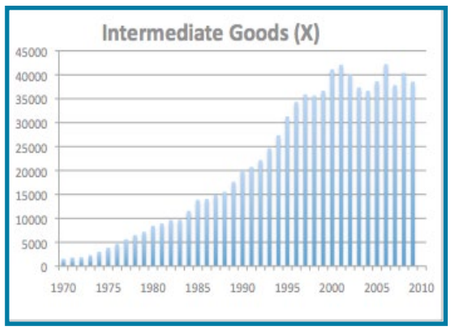
By 2010, exports had increased to around £40 billion but imports had increased to over £50 billion. The sector deficit is estimated at around £12 billion.

The sector remained in surplus until the late 1980s, peaking at just under £4 billion in 1980.

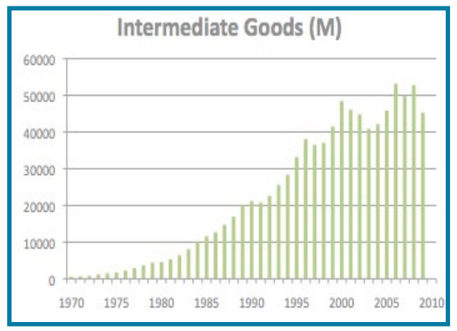
Since then the trend decline is evident in charts 3 and 4 both in absolute and relative GDP terms.

In 2010 intermediate goods accounted for 17% of exports and 15% of imports.

Sector Prospects
A trend deficit with a progressive deterioration in absolute (£) and relative terms. Some mitigation during the recession.

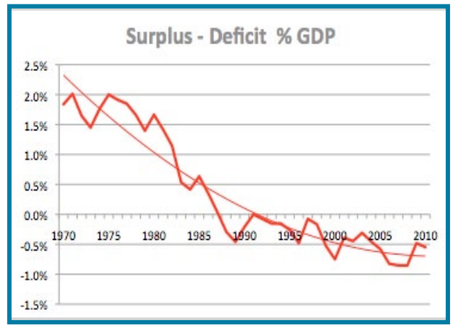


Exports have increased to around £40 billion



but exports have increased to over £50 billion

The sector deficit is estimated at around £12 billion in 2010



and the trend decline relative to GDP is evident

...but since then progressive decline

Capital Goods
Deficit averaging £10 billion...

In 1970 exports of captial goods were worth some £1.4 billion and imports were worth just £480 million. The sector experienced a surplus as with intermediates of just under £1 billion.

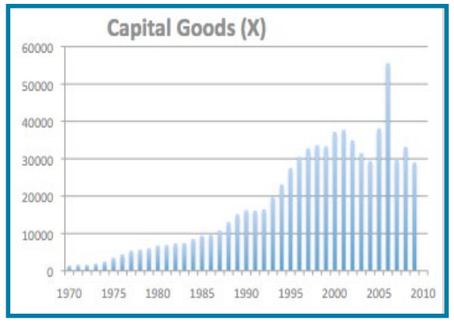
By 2010, exports of capital goods were £33 billion and imports were estimated at £45 billion. The sectoral deficit was approximately £12 billion.

Capital goods first went into deficit in the mid 1980s and later returned to surplus in the period 1990 - 1999.

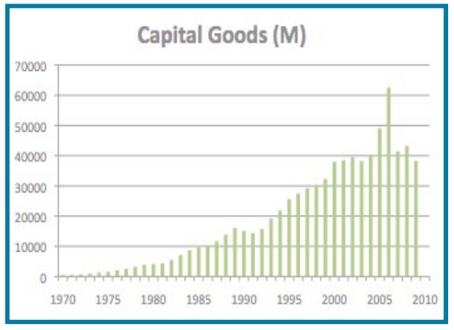
Over the last seven years, the deficit has averaged £10 billion. with little prospects for a recovery and return to surplus.

In 2010, capital goods accounted for 13% of exports and 12% of imports.

Sector Prospects
Considered to be one of the last bastions within the workshop of the world, the capital goods sector offers evidence of a trend decline with little prospects for a recovery into surplus.

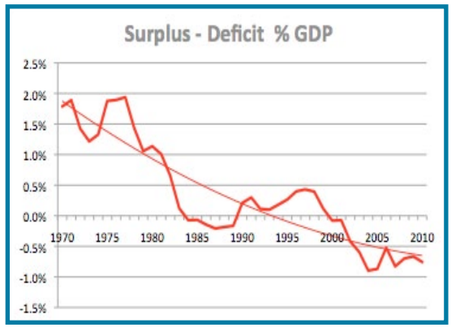


Exports of capital goods were estimated at £33 billion in 2010



and imports were valued at £45 billion

The deficits have averaged £10 billion over the last seven years



the trend deficit relative to GDP is evident

...with little prospects for recovery

Ships and Aircraft
Flying high in the 80s and 90s..

In 1970 exports of ships and aircrafts were valued at £258 million and imports were valued at £274 million. The sector experienced a deficit of just £16 million.

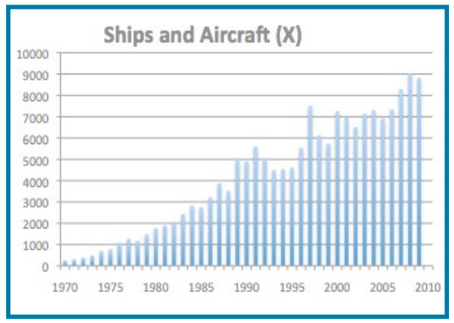
By 2010 exports had increased to £10.2 billion and imports had increased to £13.5 billion. The deficit was £3.3 billion.

Classified as “erratics” ships and aircraft manufacture experience stromg growth from the early 1980s until the late 1990s.

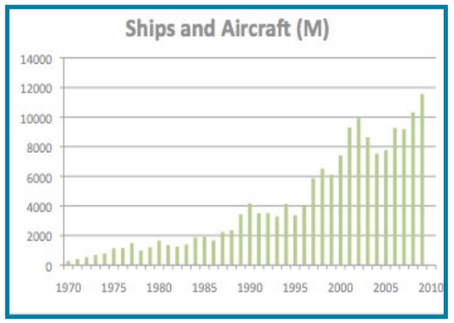
SInce then the trade performance has been erratic but with a negative trade balance over the last twelve years.

In 2010, ships and aircraft accounted for 4% of export volumes and 4% of import volumes.

Sector Prospects
Sector erratics suggest a trend forecast is more difficult. The evidence suggests a reversal of fortunes for the sector as defence cuts take toll of a sector thriving for some twenty years.

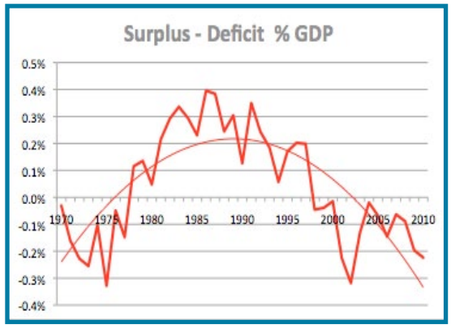


Exports of ships and aircraft were valued at £10.2 billion in 2010



and imports were valued at £13.5 billion

The deficit was £3.3 billion



and the swing in fortunes relative to GDP is clear

...but troubled waters ahead

Manufactures
For the march of the makers..

In 1970, exports of manufactured goods were valued at £4.1 billion and imports were valued at £2.0. The sector had a suplus of £2.1 billion equivalent to 4% of GDP.

Manufactures accounted for 50% of total exports 24% of total imports.

By 2010, exports had increased to £124.2 billion and imports had increased to £183.1 billion. The sector deficit was almost £60 billion and 4% of GDP.

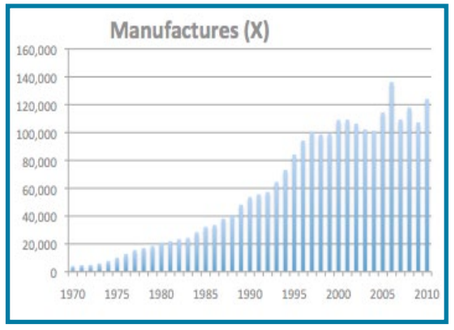
Manufactured goods were in trade surplus until the early 1980s. The Thatcher shock to output and the subsequent Lawson boom ensured the trade deficit increased to peak in the 1989 at just under £13 billion.

The recession of 1989 - 1990 reduced the deficit and a subtle date reclassification using Intrastat measures from 1992 assisted the process.

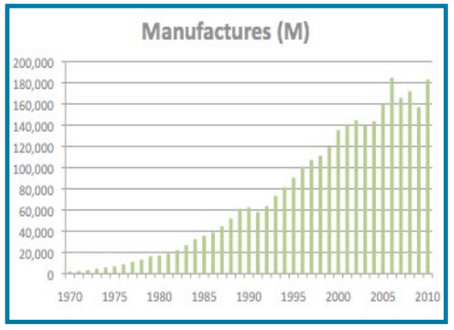
From the late 1990s onwards, the serial decline in the deficit has continued despite the recession of 2008 2009.

By 2010, manufactures accounted for 47% of exports and 50% of imports. The march of the makers in 2010 has a long road ahead if the economy is to be "rebalanced".

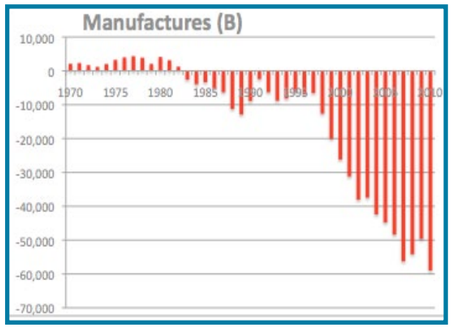
Sector Prospects
A structural deficit with a progressive deterioration in absolute (£) and relative terms.



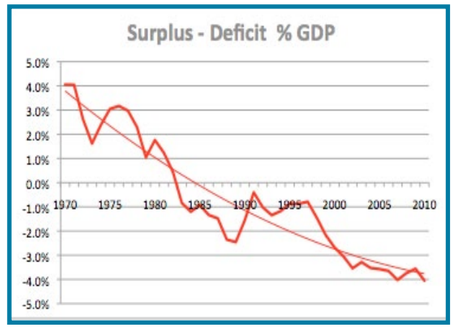
Exports increased to £124.2 billion in 2010



and imports increased to £183.1 billion.



The sector deficit was £59 billion



The trend decline relative to GDP offers an 8% swing over four years

...it's a tough road ahead

Commodities

Largely in surplus until 1998...

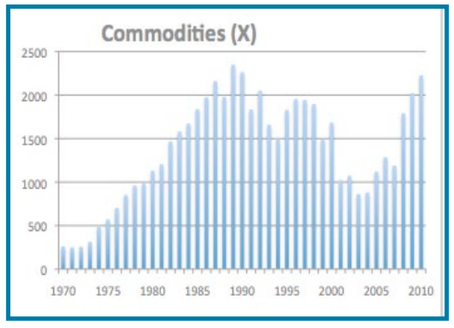
In 1970 exports of commodities were valued at £261 million and imports wer valued at £93 million. The sector surplus was valued at £168 million.

By 2010, exports had risen to £2.2 billion and imports had risen to £2.9 billion. The sector deficit was valued at £0.7 billion.

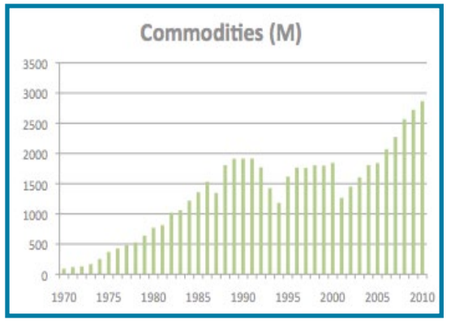
Commodities as a sector had been in surplus apart from 1991 until the late 1990s.

The deficit over the last eight years has averaged arounf £700 million.

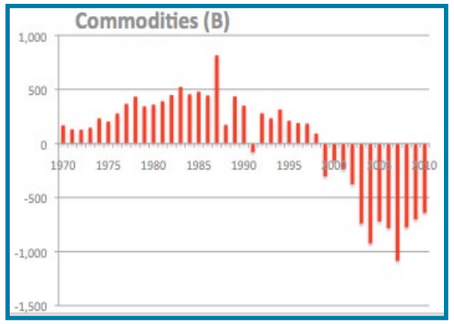
By 2010, commodities accounted for 1% of exports and 1% of imports.



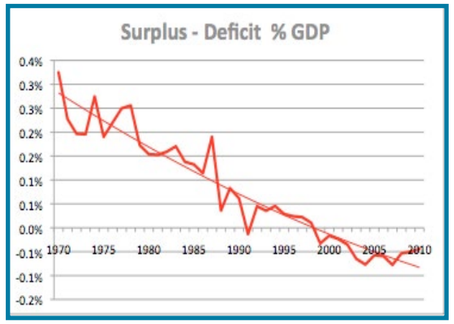
By 2010 exports had increased to £2.2 billion



and imports had increased to £2.9 billion



The deficit had increased to £0.7 billion



around 0.1% of GDP

...into deficit from 1999 onwards

Trade in Goods

Deficit has increased to £97 billion...

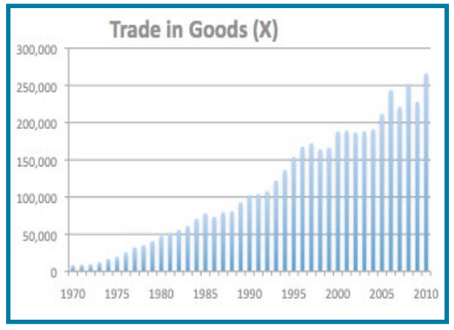
In 1970 the total trade in goods exports were worth £8.3 billion or 16% of GDP. Imports were also worth £8.3 billion, the external account was broadly in balance.

By 2010, exports had increased to £266.1 billion some 18% of GDP, imports on the other hand had risen to £363.3 billion or 25% of GDP.

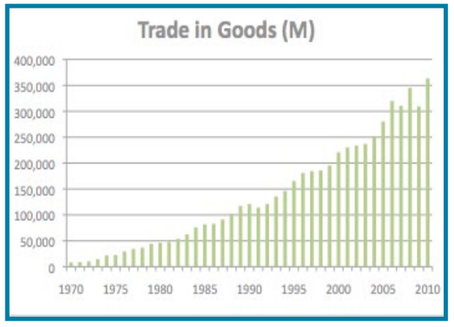
The trade in goods deficit was £97 billion almost 7% of GDP.

The UK has experienced large trade deficits previously in the 1970s during th first oil crisis and in the late 1980s during the Lawson boom.

The 2010 deficit is unprecedented in terms of depth of deficit and as a manifestation of a serial trend decline since the mid 1990s.

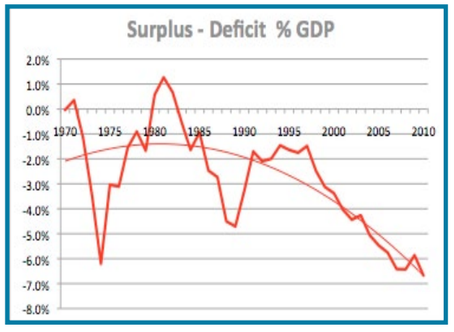


By 2010 exports, trade in goods had increased to £266.1 billion



Imports had increased to £363.3 billion

The deficit had increased to £97 billion



Almost 7% of GDP

...almost 7% of GDP

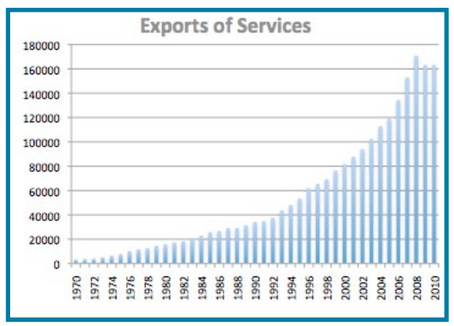
Service Sector

Service sector in surplus...

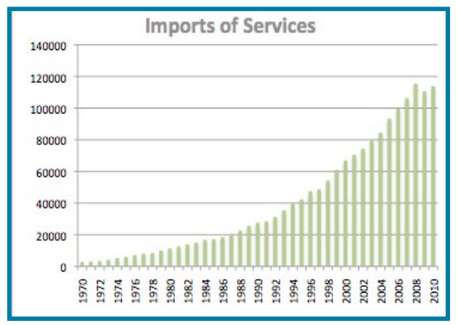
In 1970 exports of services were worth £3.2 billion and imports of services were worth some £2.8 billion. The surplus on service sector trade was £0.4 billion.

By 2010, exports of services had increased to £163.3 billion and imports had increased to £113 billion. The surplus on service sector trade had increased to £50 billion approximately.

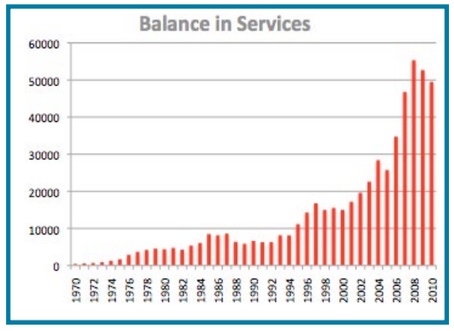
In 2010, the service sector surplus as a % of GDP was 3.5%.



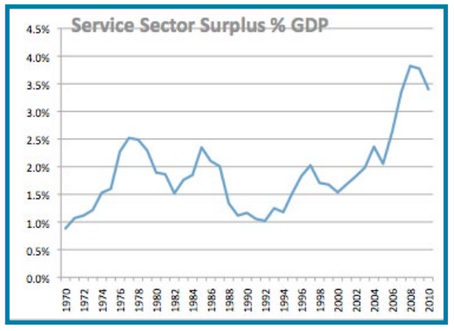
By 2010, exports of services had increased to £163.3 billion



and imports of services had increased to £113.8 billion



The service sector surlplus was £49.5 billion (2008 £55.4 billion)



or 3.5% of GDP

...to offset the trade in goods deficit

Trade in goods and Services

Recovery at a slower rate...

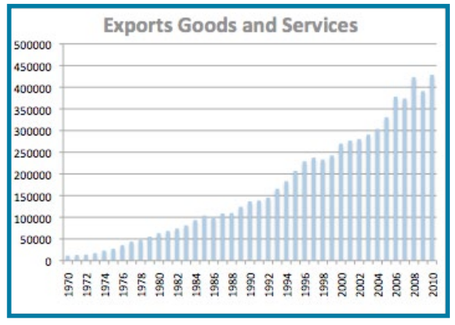
In 1970 exports of goods and services were worth £11.5 billion and imports were valued at £11.1 billion. The trade in goods and services sector was in surplus £0.4 billion.

In 2010, exports of goods and services were worth £428.6 billion and imports were worth £477.9 billion. As a result of the trade in goods deficit and despite the service sector surplus, the overall trade in goods and services sector was in deficit by some £49.3 billion almost 3.5% of GDP.

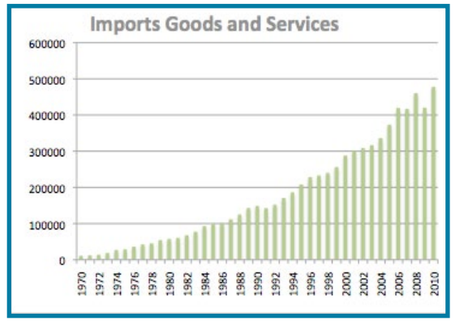
Throughout the 1970s and early 1980s, the trade in goods and services were broadly in balance except for the first oil crisis in 1974.

Only in the late 1980s did the trade balance move into the red and then only briefly as the economy moved into recession from 1989 onwards.

From the mid 1990s, despite the service sector surplus, the overall trend deficit in trade in goods has pushed the UK overall balance further into the red.



By 2010, exports of goods and services had increased to £428.6 billion



Imports had increased to £477.9 billion

The overall deficit had increased to £49.3 billion

almost 3.5% of GDP

...but almost back to the peak

Appendix 1 Basic trade equations

Derived from the original thesis
Ashcroft J K [1996] Determinants of the cyclically adjusted deficit of the visible account of the UK Balance of Payments 1980 - 1992. PhD Thesis.

The demand co-efficients are dominant and the price co-efficients do not satisfy the Marshall-Lerner condition.

Basic Import Equation

Mt = -2.82 + 2.12Yt + .331RIMP(t) - .276RIMP(t-1) + e
(-8.86) (17.38) (1.74) (-1.50)

T	= 75Q1 - 91Q3	R2	= 0.95
e	= 0.0311	DW	= 1.89
Reset (1,53)	= 1.55 [4.00]	HET (1,56)	= 1.61 [4.02]
AR (1,53) 1	= 0.00 [4.00]	AR (4,50)	= 0.30 [2.57]
AR (8,46) 8	= 0.17 [2.14]	AR (12,42)	= 0.34 [2.00]
ARCH (4)	= 1.69 [9.49]	NORM (2)	= 0.14 [5.99]
Predictive Failure Test		Stability Test	
Chow (4.54)	= 0.54 [2.53]	Chow (4.54)	= 0.41 [2.53]

Where :
M = Imports
Y = GDP
RIMP = Relative Import Prices
From this analysis, the demand variable with regard to changes in income was highly significant and was of the order of 2.12. The summed price elasticity was low and incorrectly signed (0.055).
Up to eight price lags were evaluated in the first instance.

Basic Export Equation

Xt = .4159 + 1.01WT - .278RP(t-2) - .220RP(t-4) -1.08DUM791 - .142DUM792
(13.85) (3.38) (2.58) (-4.31)

T	= 75Q2 - 92Q4	R2	= 0.81
e	= 0.024	DW	= 1.99
Reset (1,60)	= 1.17 [4.00]	HET (1,65)	= 0.03 [4.00]
AR (1,53) 1	= 0.60 [4.00]	AR (4,50)	= 0.64 [2.53]
AR (8,46) 8	= 0.49 [2.10]	AR (12,42)	= 0.63 [1.96]
ARCH (4)	= 3.14 [9.49]	NORM (2)	= 0.68 [5.99]
Predictive Failure Test		Stability Test	
Chow (4.61)	= 0.18 [2.53]	Chow (4.63)	= 0.92 [2.53]

Where :
Xt = Exports
W = World Trade
REXP = Relative Export Prices
DUM = Dock Strike Dummies for 1979 Q1 and Q2 as was the convention at that time
From this analysis, the elasticity of response of UK export volume to world trade volume is estimated at close to unity 1.01 and the price elasticity is -0.5. Up to fifteen price lags were evaluated in the first instance.

Appendix 2 Updated Model Parameters Basic Export Equation

Ordinary Least Squares Estimation

****

Dependent variable is LOGEXTIG
84 observations used for estimation from 1991Q1 to 2011Q4

****

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
INPT	9.5859	.35629	26.9049 [.000]
LOGEER	-.48469	.077368	-6.2647 [.000]
LOGWT	. 72874	.019083	38.1879 [.000]

****

R-Squared .94792 R-Bar-Squared .94664

S.E. of Regression .065031 F-Stat. F(2,81) 737.2131[.000]

Mean of Dependent Variable 10.7239 S.D. of Dependent Variable .28152

Residual Sum of Squares .34255 Equation Log-likelihood 111.8994

Akaike Info. Criterion 108.8994 Schwarz Bayesian Criterion 105.2531

DW-statistic .34220

****

Diagnostic Tests

****

* Test Statistics *	LM Version *	F Version *
A:Serial Correlation	*CHSQ(4) = 58.6047 [.000]	*F(4,77) = 44.4231[.000]*
B:Functional Form	*CHSQ(1) = 14.5229 [.000]	*F(1,80) = 16.7225[.000]*
C:Normality	*CHSQ(2) = 3.0824 [.214]*	Not applicable *
D:Heteroscedasticity	*CHSQ(1) = . 02821 [.867]	*F(1,82) = .027551[.869]*

****

A : Lagrange multiplier test of residual serial correlation
B : Ramsey's RESET test using the square of the fitted values
C : Based on a test of skewness and kurtosis of residuals
D : Based on the regression of squared residuals on squared fitted values

Appendix 3 Updated Model Parameters Basic Import Equation

Ordinary Least Squares Estimation

****

Dependent variable is LOGM
81 observations used for estimation from 1991Q1 to 2011Q1

****

Regressor	Coefficient	Standard Error	T-Ratio [Prob]
INPT	-18.3630	1.0876	-16.8838 [.000]
LOGRIMP	.18305	.10686	1.7129 [.091]
LOGGDP	2.2639	.063654	35.5653 [.000]

****

R-Squared .94783 R-Bar-Squared .94649

S.E. of Regression .080146 F-Stat. F(2,78) 708.5451[.000]

Mean of Dependent Variable 10.8961 S.D. of Dependent Variable .34647

Residual Sum of Squares .50102 Equation Log-likelihood 91.0311

Akaike Info. Criterion 88.0311 Schwarz Bayesian Criterion 84.4394

DW-statistic .16653

****

Diagnostic Tests

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* Test Statistics *	LM Version *	F Version *
* A:Serial Correlation	*CHSQ(4) = 68.0531[.000]	*F(4,74) = 97.2418[.000]*
* B:Functional Form	*CHSQ(1) = 8.2076[.004]	*F(1,77) = 8.6820[.004]*
* C:Normality	*CHSQ(2) = 6.6201[.037]*	Not applicable *
* D:Heteroscedasticity	*CHSQ(1) = 8.2151[.004]	*F(1,79) = 8.9166[.004]*

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A : Lagrange multiplier test of residual serial correlation
B : Ramsey's RESET test using the square of the fitted values
C : Based on a test of skewness and kurtosis of residuals
D : Based on the regression of squared residuals on squared fitted values

Notes and Guidance

Sections of the pro.manchester Economics Quarterly Review and discussion papers have been selected from a maintained database of over 500 graphs and economic time series data prepared and maintained for the purposes of monitoring trends in the British Economy and assessing implications for business and investment decisions in the UK.

Data - derived from the ONS office for National Statistics service on a weekly and monthly basis as and when published. The information in the review will contain all recently published information as at the publication date.

The models used in the development of the forecasts include a variety of econometric models using conventional regression analysis, auto regressive VAR modelling, neural network modelling and dynamic empirical assessment.

The format has been developed to provide ease of communication of the comprehensive database. Feedback is welcome. If you have any comments, then please let us know.

The information provided is for private information only and no actions are solicited based upon this information.

Opinions expressed are my own and in no way reflect pro.manchester policy. The opinions are valid at time of publication but may change as events unfold, In matters of the economy, It is better to be right than consistent.

The material is based upon information which we consider to be reliable but we do not represent that it is accurate or complete and it should not be relied upon as such. We accept no liability for errors, or ommissions of opinion or fact.

In particular, no reliance should be placed on the comments on trends in financial markets. The receipt of this document should not be construed as the giving of investment advice.

Thus publication has been written in general tems and cannot be relied upon to cover specific situations. Application of the principles set out will depend upon particular circumstances and it is recommended that professional advice is obtained before acting or refraining from acting on any of the contents of this publication.

pro.manchester members would be pleased to advise on how to apply the principles in this publlication to their specific circumstances.

Discussion Paper

Forty Years of UK Trade 1970 - 2010

April 2012

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