

## Long-run trends in exchange rate competitiveness

Commissioned by Film Commissioner's Office, UK Film Council

Hasan Bakhshi, 15 May 2007

---

### Summary

- Over the past 25 years, there has been no clear trend in most currencies against the dollar, with the sterling-dollar relationship particularly stable.
- However, since 2000, there has been a marked depreciation of the dollar against most currencies. Other things equal this has made the US more attractive as a production location.
- The extent of this movement varies markedly between different bilateral exchange rates.
- The largest appreciation against the dollar has been in the Czech Republic, where the koruna has gained over 40% since the beginning of 2000, followed by the New Zealand dollar at around 30%. The pound, euro, Australian and Canadian dollars have all appreciated by around 20% over this period. The South African rand has bucked the trend with a depreciation of 14%, but that masks huge swings since 2000.
- But nominal movements in exchange rates do not tell the whole story about relative competitiveness. For example, since the middle of 2005 around one-half of the gain in South African competitiveness, and one-half of the loss in Czech competitiveness has been offset by relatively high and low inflation in these countries respectively.
- The analysis in this paper compares different real exchange rate series using average consumer prices, cultural service prices and unit labour costs as deflators. The differences in measures are not on the whole large, though there are some exceptions such as the dollar-rand exchange rate where the different measures give significantly different results.
- In real terms, the UK has probably suffered the least loss in competitiveness against the US since 2000 (even less than South Africa too, given high unit labour cost inflation in that country).
- More recently, since the middle of 2005, there has been some dispersion of relative competitiveness – Canada has become less competitive with respect to both the US and the UK; South Africa and New Zealand have become significantly more competitive against all currencies; the UK has become somewhat less competitive against the US; the Czech Republic and the UK (so far as we can tell) have stayed roughly equal.

## Introduction

Movements in exchange rates have an important impact on the economics of film production. Sterling appreciation is bad for UK film companies earning their revenues overseas in foreign exchange (they get less £ in exchange for their foreign-exchange denominated revenues). This effect may partly be offset by a fall in sterling costs for inputs to the film-making process that are denominated in foreign currency.

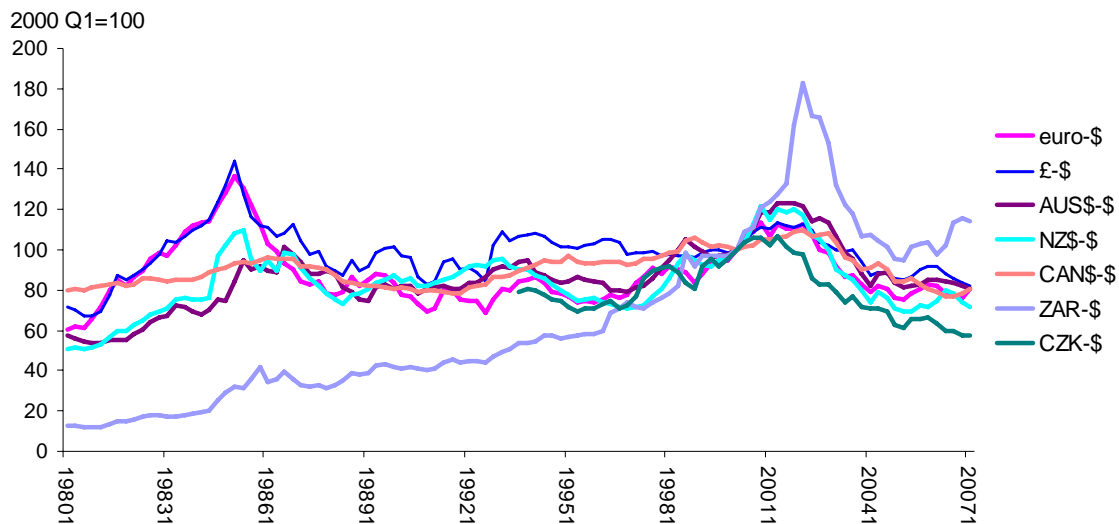
By the same token, a stronger pound makes purchases of UK inputs to production, such as wage costs, more expensive to foreign film makers – conversely, a relatively weak dollar makes US production more attractive.

A stronger £ may also make it more difficult for UK film producers to borrow from overseas investors, to the extent that a given sterling production budget requires a bigger investment in foreign exchange-denominated terms. The rate of return charged by US investors will of course be higher if a further dollar depreciation is expected.

Investors and overseas film producers can take out insurance against the risk of future exchange rate fluctuations. The cost of doing so will in general be higher the more volatile the exchange rate.

## History of exchange rate movements

**Figure 1: Nominal value of US \$ in selected currencies since 1980**



Source: IMF

Figure 1 shows long-run movements in the value of the US dollar against a selection of currencies (indexed on 2000 Q1=100).<sup>1</sup> (Figures A1 to A3 in the Appendix plot these exchange rates separately).

<sup>1</sup> Throughout this paper, quarterly exchange rates refer to monthly averages of daily rates, with the exception of the Czech koruna which is the average of end-month rates. 2007 Q1 refers to averages of January and February as daily rates were not available for March 2007.

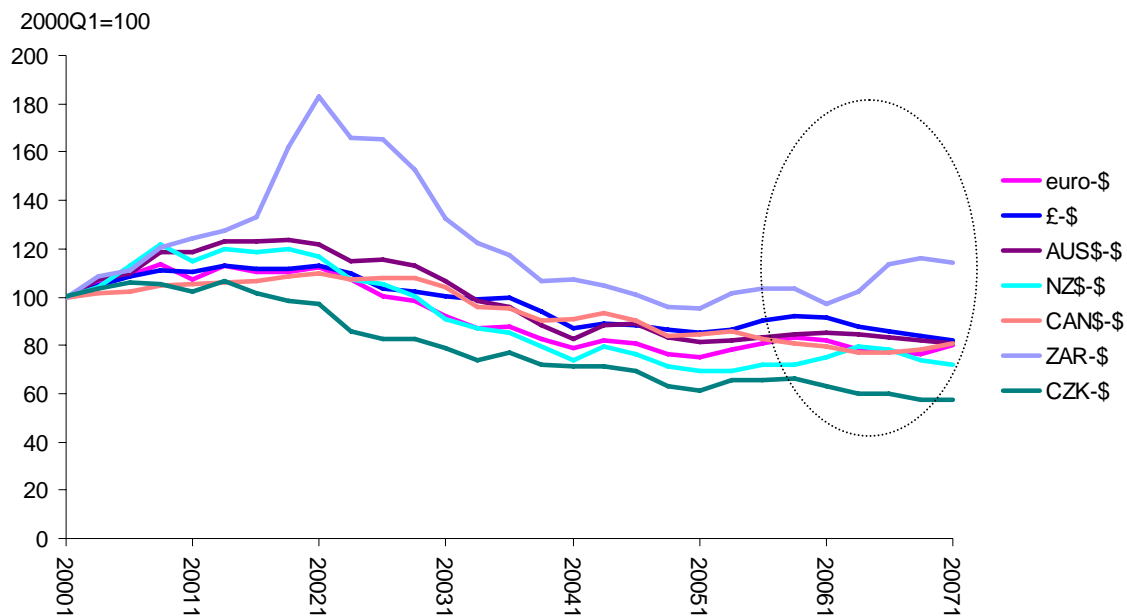
The first thing to note is the apparent lack of long-run trend in all currencies over this period, with the exception of the South African rand. That reflects the fact that the euro area, UK, Australia, New Zealand and Canada are all – like the US – advanced industrial countries with broadly similar growth and inflation rates. The fortunes of the Czech koruna have been tied closely to the euro.

Second, there has been a marked depreciation in the dollar against most other currencies over the period since around 2001. This has more than reversed the dollar appreciation that characterised the late 1990s.

Third, the sterling-US dollar exchange rate has been less volatile over this period than all other currencies, with the exception of the Canadian dollar. (The close structural links between the US and Canada mean that the value of the two currencies tends to move together over long periods of time).

Remarkably, since 2000, the sterling-US dollar exchange rate has been less volatile than even the Canadian dollar-US dollar rate (Figure 2).<sup>2</sup> This matters to film financiers and producers: the higher the volatility in dollar-exchange rates, the greater the risk that adverse exchange rate movements will eat into profits when repatriated. The relative stability of the sterling-US dollar exchange rate is a major attraction of the UK as a production location from the viewpoint of US investors.

**Figure 2: Nominal value of US \$ in selected currencies since 2000**



Source: IMF

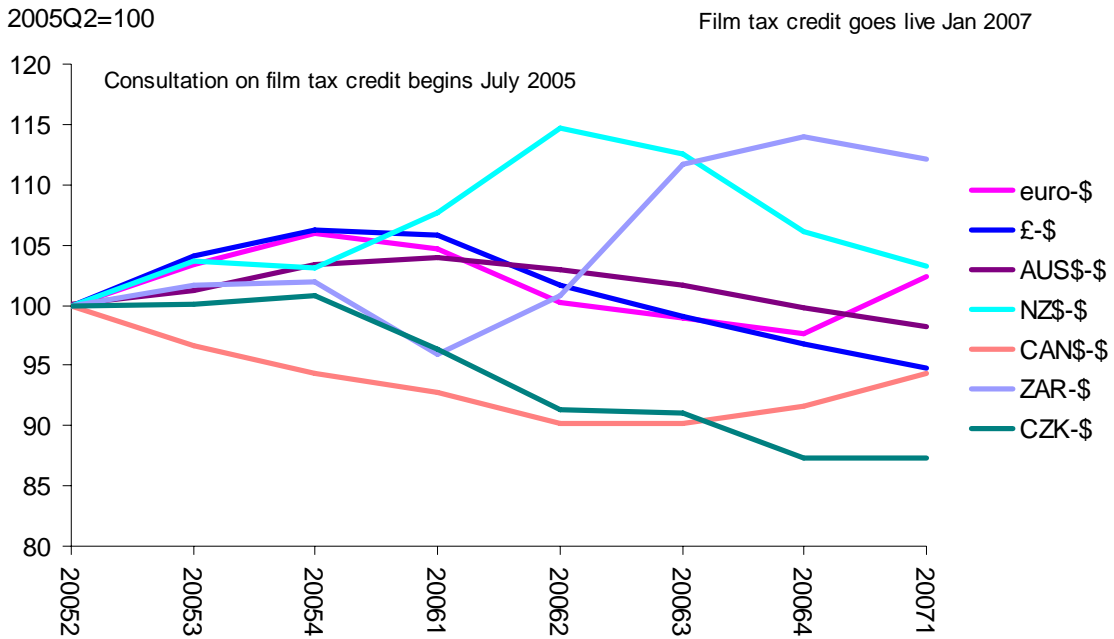
Looking particularly over the period since mid-2005 – the beginning of the consultation period on the new UK film tax credit (circled in Figure 2) – the US dollar depreciated against sterling by over 5%, somewhat less than against the Canadian dollar, and much

<sup>2</sup> This is supported by formal statistical measures of volatility (see Figure A4 in the Appendix).

less than the 13% against the Czech koruna. This effect would tend to make US-located production relatively more attractive. However, the dollar appreciated significantly against the rand and, less so, the New Zealand dollar.

In Figure 3, the exchange rates have been re-indexed to 2005 Q2 to bring out more clearly these movements since the start of the tax credit consultation period.

**Figure 3: Nominal value of US \$ in selected currencies since 2005 Q2**



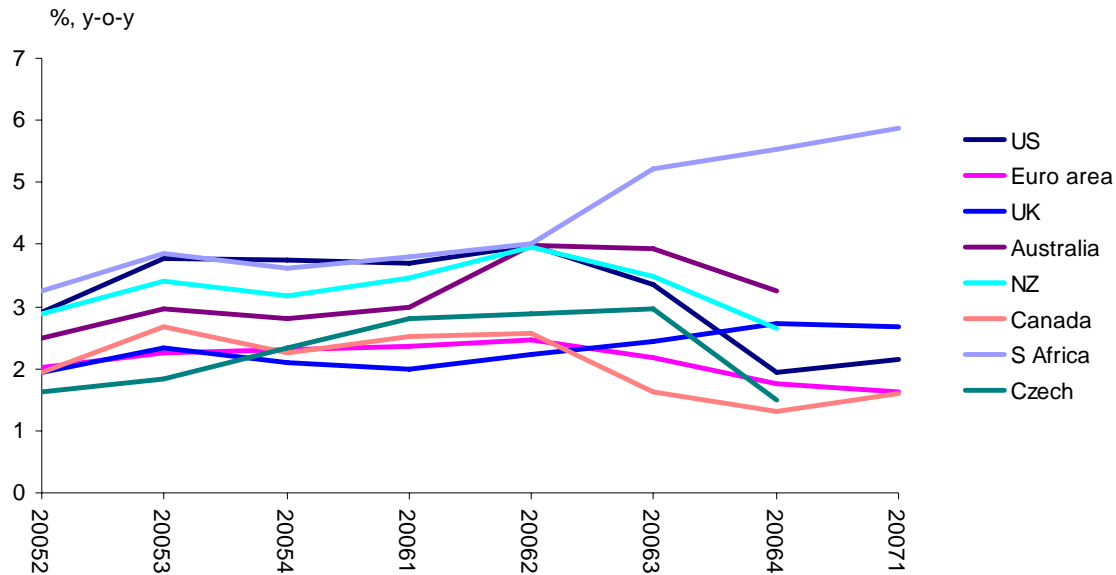
Source: IMF

### Real exchange rate measures

Movements in nominal exchange rates are only one factor determining the relative competitiveness of different countries. It is also important to look at how domestic prices in the various countries have evolved: if an appreciating exchange rate is accompanied by low inflation relative to other countries, then overall competitiveness may be maintained. In order to consider this, we look at various measures of the real exchange rate.

Figure 4 sets out the movements in the consumer price index (CPI) of the countries under consideration here. It shows that the nominal exchange rate movements since July 2005 outlined above exaggerate the extent of South Africa's increase in competitiveness against the US dollar. This is because South Africa has had higher inflation than the US (and other countries). Likewise, the sharp appreciation of the koruna in nominal terms has been partly offset by the Czech Republic's relatively low inflation. Note that the UK has seen some of the lowest inflation over this period.

**Figure 4: CPI Inflation in selected countries since 2005 Q2**

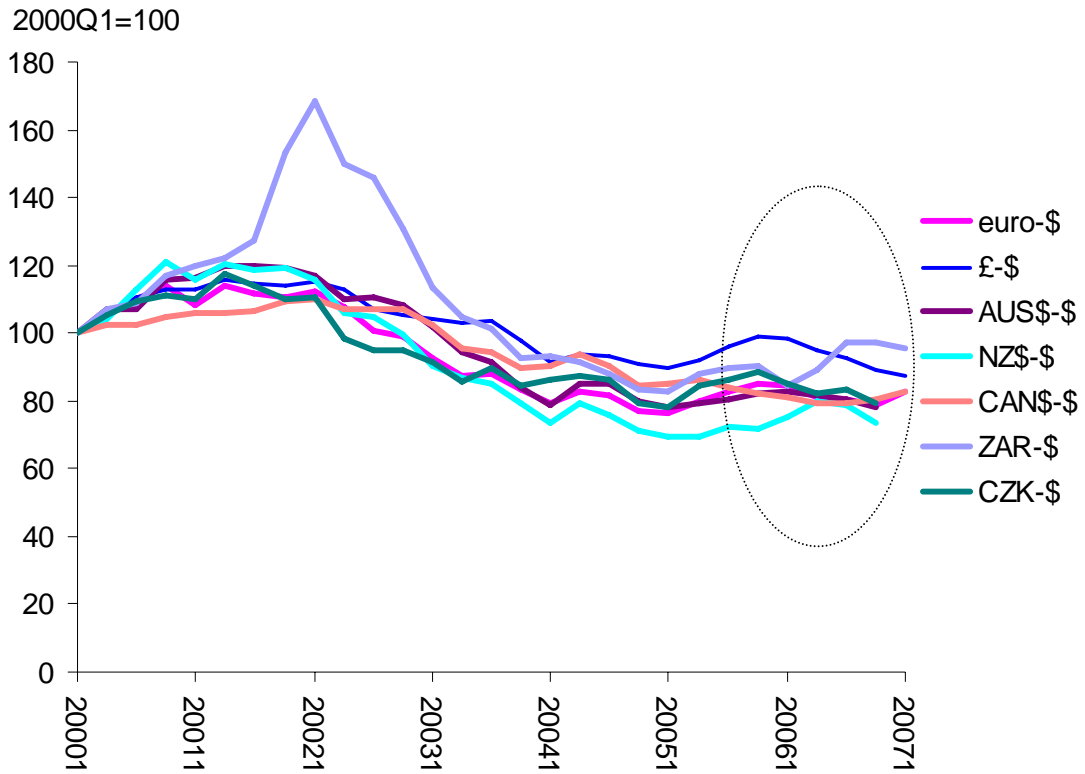


Source: IMF, ECB and Lehman Brothers

Allowing for the different inflation rates across countries, the movements of the US dollar exchange rate against some currencies in real (inflation-adjusted) terms – notably the koruna and rand – appear to have been less pronounced than in nominal terms (see Figures 5 and 6). In the case of South Africa, as a result of relatively high inflation rates, there is a significant difference between real and nominal exchange rate performance, with real dollar appreciation against the rand of only 10% between 2005 Q2 and 2006 Q4 compared with a nominal movement of 14%. Conversely in the Czech Republic, relatively low inflation has meant that the koruna has appreciated by only 6% against the dollar in real terms over this period compared with 13% in nominal terms. The evolution of real exchange rates over the longer period since 1980 is plotted in Figure A5 in the Appendix.

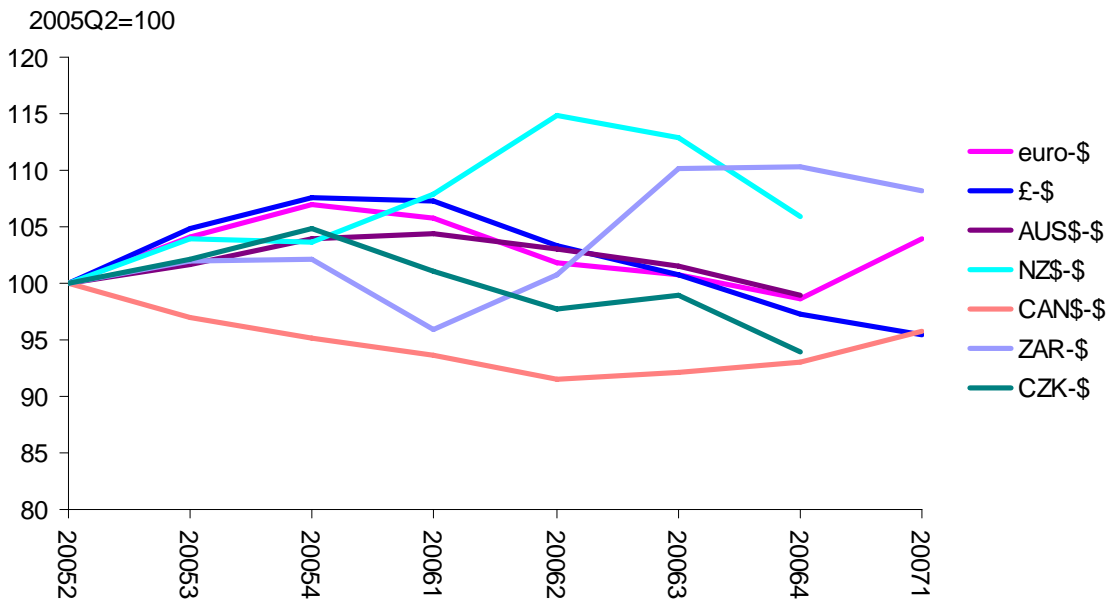
Interestingly, sterling's low volatility against the US dollar compared with the other currencies is even *more* pronounced in real terms: it has been more stable than the Canadian-US dollar exchange even over the whole 1980 Q1 – 2007 Q1 sample period (see also Figure A6 in Appendix).

**Figure 5: Real value of US \$ in selected currencies since 2000 (CPI)**



Source: IMF, ECB and Lehman Brothers

**Figure 6: Real value of US \$ in selected currencies since 2005 Q2 (CPI)**

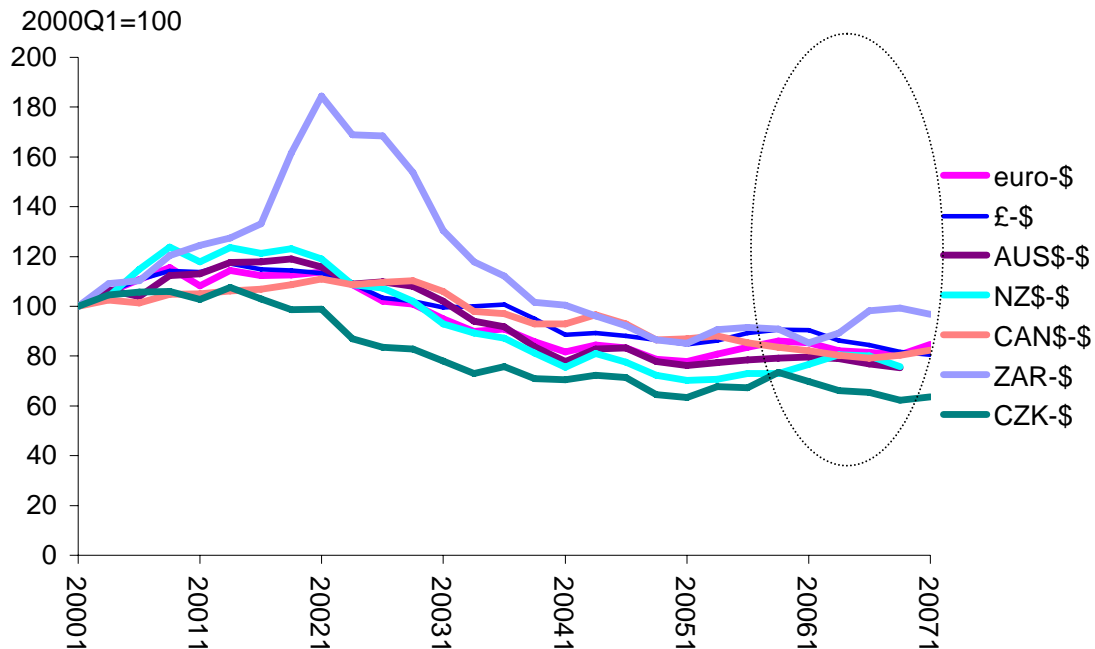


Source: IMF, ECB and Lehman Brothers

Arguably, adjusting nominal exchange rate movements for inflation using national consumer price indices makes little sense from the viewpoint of film financiers and producers. What they are interested is in movements in film production costs across countries – and these may be poorly correlated with average consumer prices. Time-series data on film production costs are not readily available, but, arguably, disaggregate consumer price indices which more closely relate to the film sector may be a better proxy than average consumer prices.

Figures 7 and 8 plot real exchange rates using price indices for cultural services (which include going to the cinema) for the different countries.<sup>3</sup>

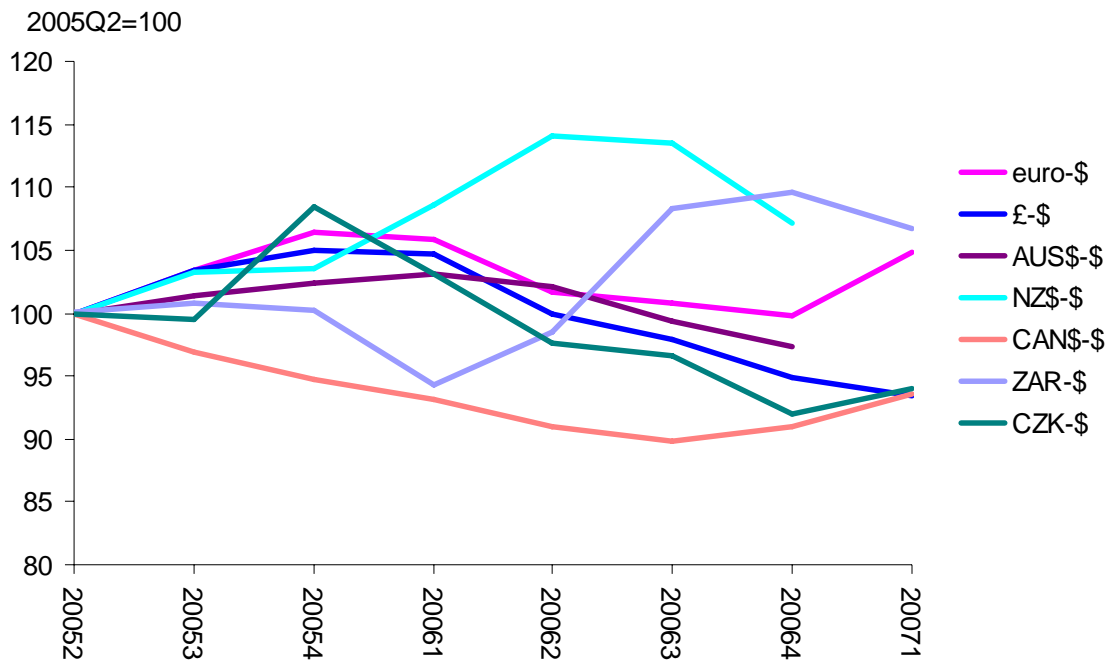
**Figure 7: Real value of US \$ in selected currencies since 2000 (cultural services price)<sup>1</sup>**



<sup>1</sup>The cultural service price indices were seasonally adjusted using Census X12.  
Source: IMF, Lehman Brothers, Bureau of Labour Statistics, Eurostat, ONS, Australian Bureau of Statistics, Statistics New Zealand, Statistics Canada, Statistics South Africa

<sup>3</sup> The cultural service price indices were collected from the different countries' national statistical services so there are likely to be (small) differences in classification.

**Figure 8: Real value of US \$ in selected currencies since 2005 Q2 (cultural services price)<sup>1</sup>**



<sup>1</sup>The cultural service price indices were seasonally adjusted using Census X12.  
 Source: IMF, Lehman Brothers, Bureau of Labour Statistics, Eurostat, ONS, Australian Bureau of Statistics, Statistics New Zealand, Statistics Canada, Statistics South Africa

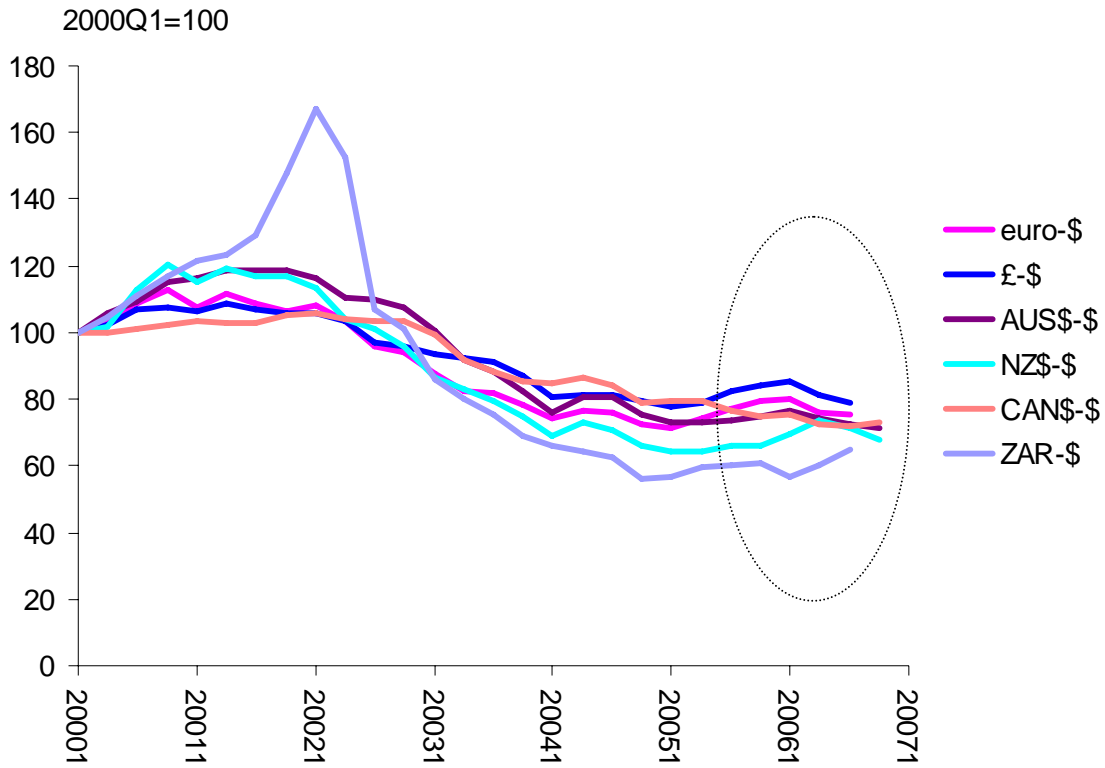
Over the most recent period since 2005 Q2, the main difference between the real exchange rate measures is that the real appreciation of sterling, Canadian dollar and koruna against the US dollar is slightly greater than where the CPI measure is used.

While conceptually more attractive perhaps than using average consumer price indices, real exchange rate measures using cultural service price indices are obviously still highly imperfect proxies for domestic production cost conditions in the film industry. As consumer – as opposed to producer – price indices, they will, for example, still reflect the price of imports as well as domestically produced goods. The cultural services category also includes non-film recreational/cultural items such as going to the theatre and concerts. And consumer price indices include all domestic margins in the film value chain, such as in distribution and in exhibition.

For all these reasons, it is informative to look at real exchange rates calculated using unit labour cost indices. This is of interest because wage costs can be an important element of total film production costs. Although labour cost indices are again only available at an economy-wide, as opposed to film industry level, there are good reasons for thinking that wage growth is broadly similar across sectors – at least over longer periods of time – so this may not be a bad approximation.

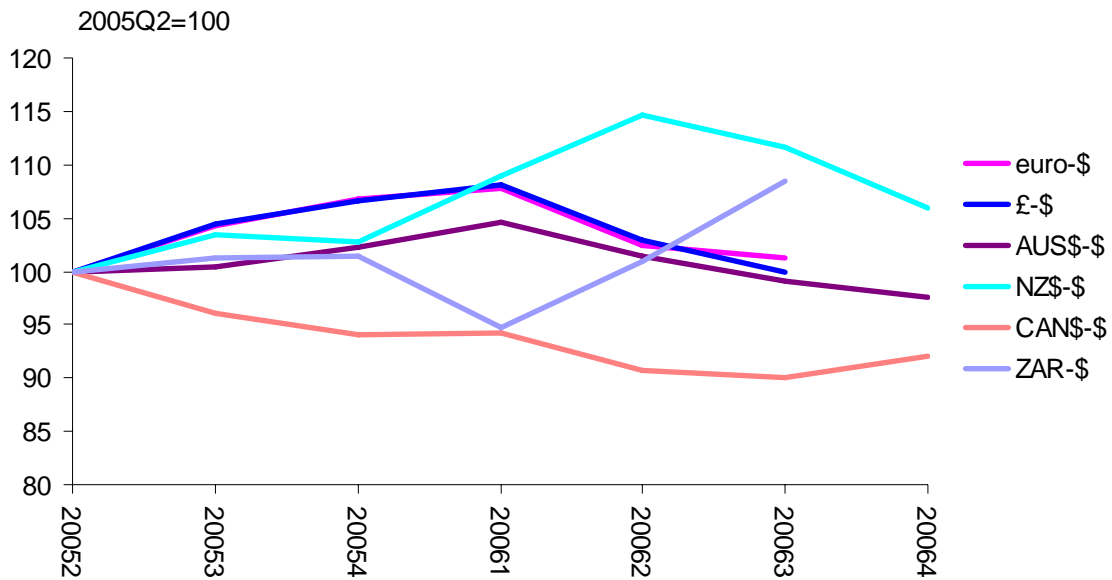
Figures 9 and 10 plot real exchange rates calculated by deflating the various exchange rates by unit labour cost indices (a longer run is plotted in Figure A7 in the Appendix).

**Figure 9: Real value of US \$ in selected currencies since 2000 (ULC)<sup>1</sup>**



<sup>1</sup>Unit labour cost indices are not available for the Czech Republic. US unit labour costs are for the non-farm business sector. The UK data are unit wage costs. The New Zealand data use salary and wage costs. Canadian unit labour costs refer to the business sector. The South African unit labour costs series is the average for the non-agricultural sectors.  
Source: IMF and Lehman Brothers.

**Figure 10: Real value of US \$ in selected currencies since 2005 Q2 (ULC)<sup>1</sup>**



<sup>1</sup>Unit labour cost indices are not available for the Czech Republic. US unit labour costs are for the non-farm business sector. The UK data are unit wage costs. The New Zealand data use salary and wage costs. Canadian unit labour costs refer to the business sector. The South African unit labour costs series is the average for the non-agricultural sectors. Source: IMF and Lehman Brothers.

The main difference to note is that the US dollar has on this measure depreciated very significantly against the Rand since 2000, reflecting high unit labour cost inflation in South Africa over this period.

### Conclusions

Overall, the graphs here illustrate that the sterling-US dollar relationship – particularly considered on a real basis, ie after accounting for relative inflation – has been characterised by relative stability over the past 25 years, compared with other bilateral \$ exchange rates. This stability is a major attraction of the UK as a production location to foreign investors and film producers.

The past two years have seen a depreciation of the dollar against the pound of just over 5% of on most measures – nominal and real alike. Other things equal this has made US-located production relatively more attractive.

The most marked nominal exchange rate movements over this shorter period of time have been the 12% depreciation in the rand and 13% appreciation in the koruna. But it seems that around one-third of the consequent gain in South African competitiveness

and one-half the loss in Czech competitiveness has been offset by relatively high and low inflation in these countries respectively.

We have considered three different real exchange rate series – which use average prices, cultural service prices and unit labour costs in the different countries (for convenience movements in these indices since 2005 Q2 have been reproduced in Figure A8 in the Appendix). The differences in measures are not on the whole large. For some exchange rates, notably the US dollar-rand, the differences between the measures are significant. However for others – including the sterling-US dollar exchange rate – the variation is not marked.

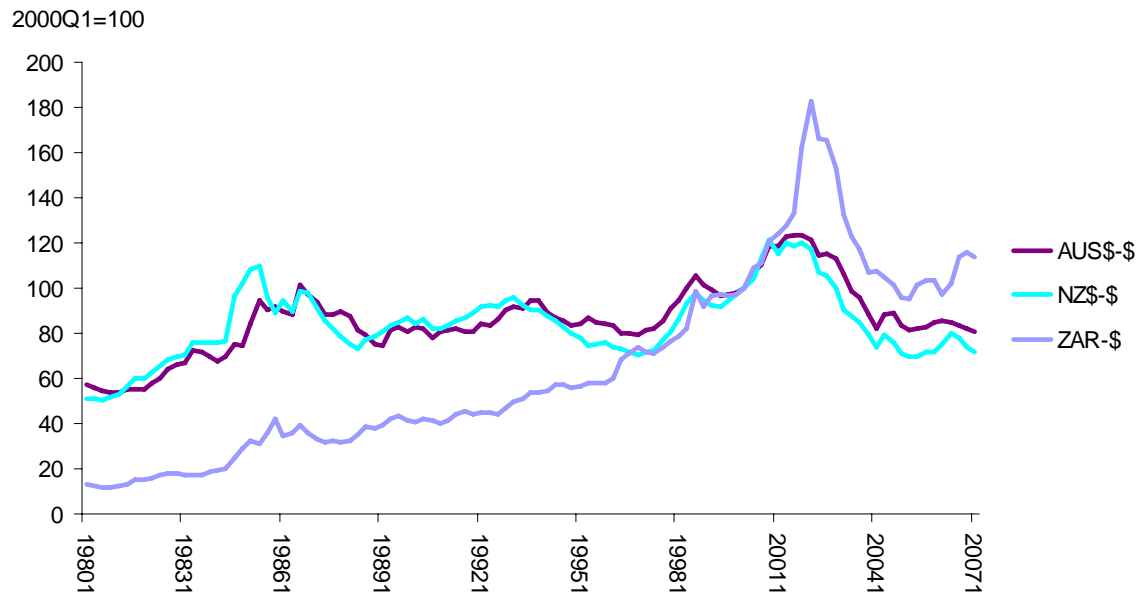
## Appendix

**Figure A1: Nominal value of US \$ in selected European currencies**



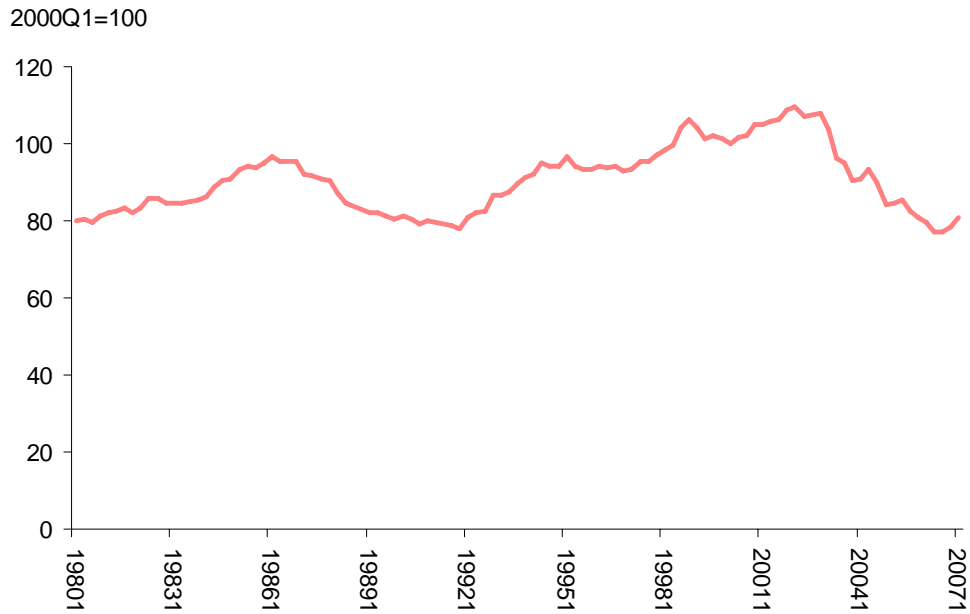
Source: IMF

**Figure A2: Nominal value of US \$ in selected non-European currencies**



Source: IMF

**Figure A3: Nominal value of US dollar in Canadian dollars**



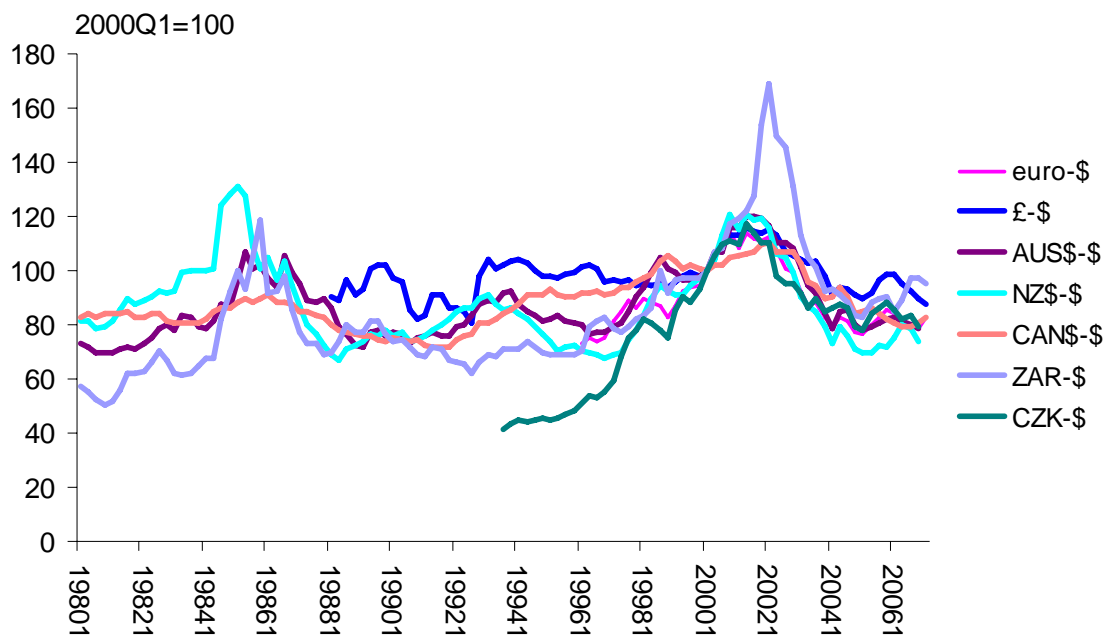
Source: IMF

**Figure A4: Volatility in various \$-exchange rates<sup>1</sup>**

	EUR	GBP	AUD	NZD	CAD	ZAR	CZK
1980 Q1-2007 Q1	0.17	0.13	0.18	0.18	<b>0.10</b>	0.63	0.17
2000 Q1-2007 Q1	0.15	<b>0.11</b>	0.16	0.21	0.12	0.20	0.22

<sup>1</sup>Coefficients of variation (calculated as the standard deviation of exchange rate movements divided by the mean value of the exchange rate).

**Figure A5: Real value of US \$ in selected currencies (CPI)**



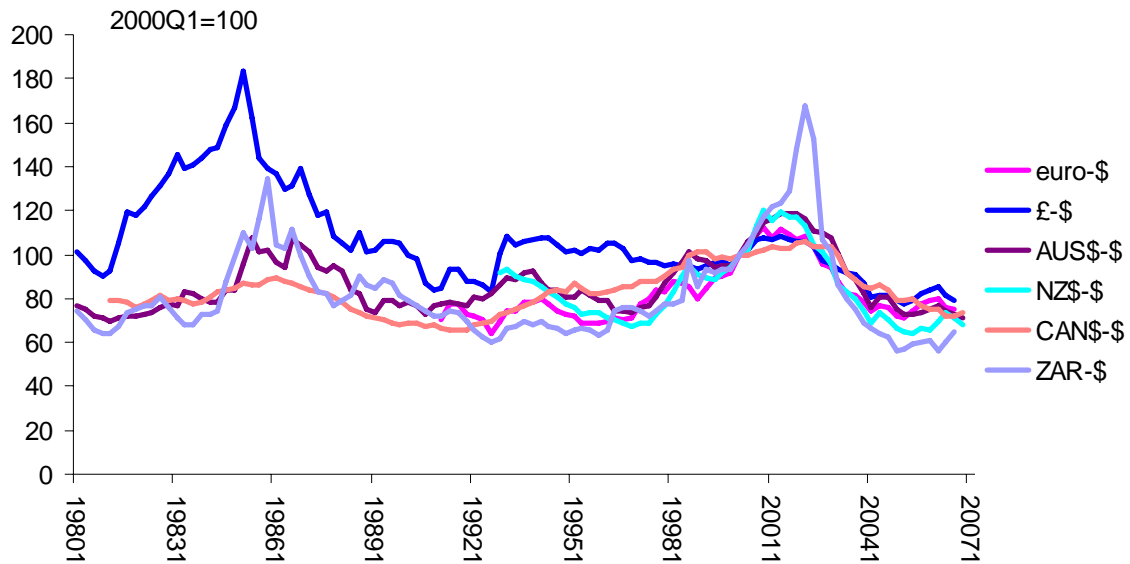
Source: IMF, ECB and Lehman Brothers

**Figure A6: Volatility in various real \$-exchange rates (CPI)<sup>1</sup>**

	EUR	GBP	AUD	NZD	CAD	ZAR	CZK
1980 Q1-2007 Q1	0.14	<b>0.08</b>	0.15	0.18	0.11	0.26	0.28
2000 Q1-2007 Q1	0.15	<b>0.09</b>	0.16	0.20	0.11	0.21	0.13

<sup>1</sup>Coefficients of variation (calculated as the standard deviation of exchange rate movements divided by the mean value of the exchange rate).

**Figure A7: Real value of US \$ in selected currencies (ULC)<sup>1</sup>**



<sup>1</sup>Unit labour cost indices are not available for the Czech Republic. US unit labour costs are for the non-farm business sector. The UK data are unit wage costs. The New Zealand data use salary and wage costs. Canadian unit labour costs refer to the business sector. South African unit labour costs series is the average for the non-agricultural sectors.  
Source: IMF and Lehman Brothers.

**Figure A8: Real exchange rates – a comparison of different measures**

**Real value of US \$ in selected currencies (CPI), 2005 Q2=100**

	Euro-\$	£-\$	AUSS-\$	NZ\$-\$	CAN\$-\$	ZAR\$-\$	CZK-\$
2005 Q2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2005 Q3	104.0	104.8	101.7	104.0	97.0	101.9	102.1
2005 Q4	106.9	107.5	104.0	103.6	95.2	102.2	104.8
2006 Q1	105.7	107.2	104.3	107.8	93.6	95.9	101.1
2006 Q2	101.8	103.4	103.0	114.8	91.5	100.8	97.7
2006 Q3	100.7	100.7	101.4	112.8	92.1	110.1	98.9
2006 Q4	98.7	97.3	99.0	105.9	93.0	110.4	93.9
2007 Q1	97.6	95.7	N/A	N/A	95.6	109.1	N/A

**Real value of US \$ in selected currencies (cultural services price), 2005 Q2=100**

	Euro-\$	£-\$	AUSS-\$	NZ\$-\$	CAN\$-\$	ZAR\$-\$	CZK-\$
2005 Q2	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2005 Q3	103.4	103.4	101.4	103.3	96.8	100.9	99.5
2005 Q4	106.4	105.0	102.4	103.5	94.7	100.2	108.5
2006 Q1	105.8	104.7	103.1	108.6	93.1	94.2	103.2
2006 Q2	101.7	100.0	102.1	114.1	91.0	98.4	97.6
2006 Q3	100.9	97.9	99.3	113.5	89.8	108.3	96.6
2006 Q4	99.8	94.8	97.4	107.1	91.0	109.6	92.0
2007 Q1	98.4	93.6	N/A	N/A	93.4	107.6	94.3

**Real value of US \$ in selected currencies (ULC), 2005 Q2=100**

	Euro-\$	£-\$	AUSS-\$	NZ\$-\$	CAN\$-\$	ZAR\$-\$	CZK-\$
2005 Q2	100.0	100.0	100.0	100.0	100.0	100.0	N/A
2005 Q3	104.2	104.4	100.5	103.4	96.1	101.3	N/A
2005 Q4	106.9	106.6	102.3	102.8	94.1	101.4	N/A
2006 Q1	107.8	108.1	104.6	109.0	94.3	94.7	N/A
2006 Q2	102.4	102.9	101.4	114.6	90.6	100.9	N/A
2006 Q3	101.3	100.0	99.0	111.7	90.1	108.5	N/A
2006 Q4	N/A	N/A	97.7	106.0	92.0	N/A	N/A
2007 Q1	N/A	N/A	N/A	N/A	N/A	N/A	N/A