

WHEN THE SEASONS CHANGE: TOURISM SEASONALITY IN BARBADOS

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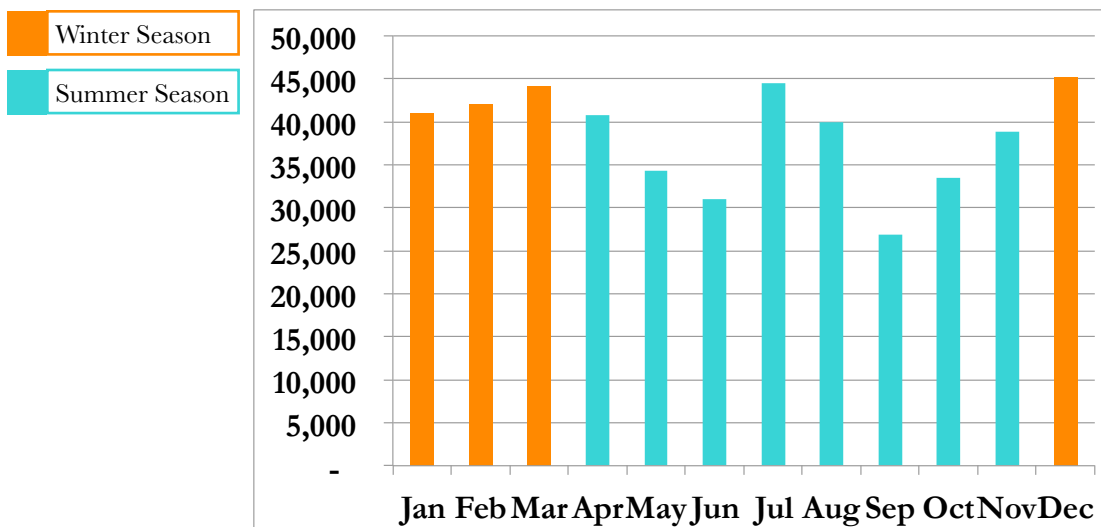
In Barbados, the so-called ‘winter’ season that falls between December and March is considered to be the peak time of the year for tourist arrivals. Businesses and policymakers structure their policies and operations to capitalise on the expected surge in arrivals during that period. But what if the long-held views on Barbados’ tourists seasons were wrong? What if seasonality trends had changed? Our research suggests that seasonal trends in tourist arrivals have been evolving and these traditional notions of the tourist season in Barbados may need to be revised.

Traditionally, visitors came during the ‘winter’ season to escape winter conditions in the temperate climates where most of Barbados’ visitors originate. The practice of splitting the year into a ‘winter’ season and a ‘summer’ season stems from Barbados’ location within the tropics and its ‘sun, sea and sand’ appeal. As the tourism product has matured, Barbados has added numerous other attractions to its portfolio, from heritage and cultural tourism to sports tourism to second homes and more. While these niches supplement the usual tropical holiday, they have also added another layer of complexity to understanding the seasonality in tourist arrivals to the island. As other attractions became more popular – such as festivals and international sporting events – Barbados now attracts an increasing number of visitors during the off-peak or ‘summer’ season. As the off-peak months gain traction, this has implications for seasonality trends.

Exhibit 1 shows the monthly variation in average tourist arrivals between 1980 and 2012 and confirms that apart from a spike in July during the Crop Over Festival, the months with the highest arrival numbers are within the traditional winter season. When we consider the monthly variation by source market, however, we can clearly see that there is considerable variation by market (Exhibit 2). The Canadian market has the strongest resemblance to the expected seasonality with the ‘winter’ season recording the largest number of arrivals. In contrast, visitors from CARICOM exhibit the opposite behaviour, with most visiting Barbados during the ‘summer’ season. In the US market, while July receives the most visitors, the ‘winter’ season effect is clearly evident, while in the UK market,

Exhibit 1

Average monthly arrivals (1980 - 2013) clearly illustrate the ‘off-peak’ months



Source: Central Bank of Barbados and Antilles Economics

Exhibit 2

When arrivals are broken down by source market, differences in monthly patterns start to emerge



Source: Central Bank of Barbados and Antilles Economics

the uptick in arrivals starts from much earlier in the year in October. The only real low months for British visitors are June and September.

We have assumed, and the literature has supported it, that seasonality is constant, i.e. there is little variation in tourists’ preferred times to visit

Barbados. To test this theory, we looked at seasonality by source market and decomposed each major source market series into a trend, a seasonal component and an irregular component¹. The trend and seasonal components are considered to be the ‘permanent’ features of the data, i.e. they can be predicted, while the irregular component captures temporary fluctuations that cannot be explained by the other components. A temporary fluctuation may be an uptick in arrivals in anticipation of an international cricket match, the Rihanna concert or an airfare sale. Since these events do not happen at the same time every year, if at all, they are difficult to predict. So forecasters focus on understanding the trend and seasonal components. The trend component gives us an idea of how many tourists are likely to visit while the seasonal component tells us when they will come. This article is primarily concerned with the evolution of seasonal fluctuations in Barbados’ four main source markets – the UK, US, Canada and CARICOM.

We employ the univariate structural time series model by Harvey (1989) – also known as the basic structural model or BSM – to extract the seasonal component from the series. The BSM is one of the few statistical models that allow us to test whether the seasonal patterns (and other components like the trend) have changed over time. According to the BSM, we can reject the hypothesis that the seasonal patterns have not changed between 1980 and 2013 in Barbados. Exhibit 3 decomposes total arrivals to Barbados into trend, seasonal and irregular components. For the most part, the series trends upwards (Panel A). Of course, there were a few interruptions. Most notably, during the periods 1988-1992, 2001-2002, 2008-2009 and 2012-2013, the series experienced dips.

Once the trend is estimated, it can be removed from the original data, leaving behind the combined seasonal and irregular components (Panel B). From this, we can extrapolate the seasonal and irregular component (Panels C and D, respectively). In our model, if there is no seasonal variation from trend, the value of the seasonal component would be zero; if the seasonal variation is above zero/below zero, then Barbados is receiving more/fewer arrivals during that month than can be explained by the trend alone. Usually, seasonal patterns can be visually identified by regularly spaced peaks and troughs (that is, high points and low points which are repeated every year). The size of these peaks and troughs are assumed to be the same each year – for instance, a researcher may know that March is a peak month and estimate that every March there will be about 5000 more tourist arrivals than

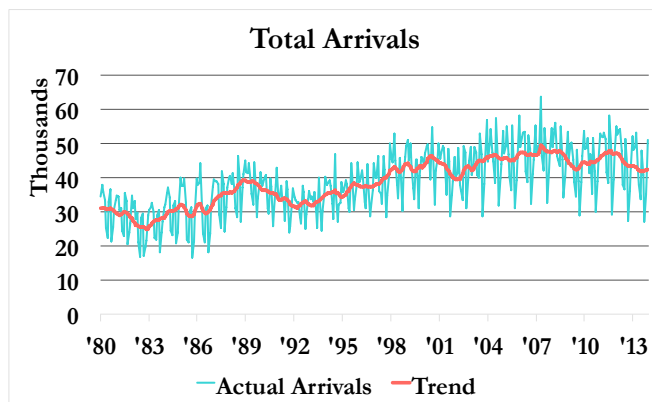
¹ There is a fourth component, the cycle, that is also present in data series. In this article, the ‘trend’ component incorporates the cycle as well.

Exhibit 3

Decomposing total arrivals into trend, seasonal and irregular components allows us to observe the seasonal behaviour alone

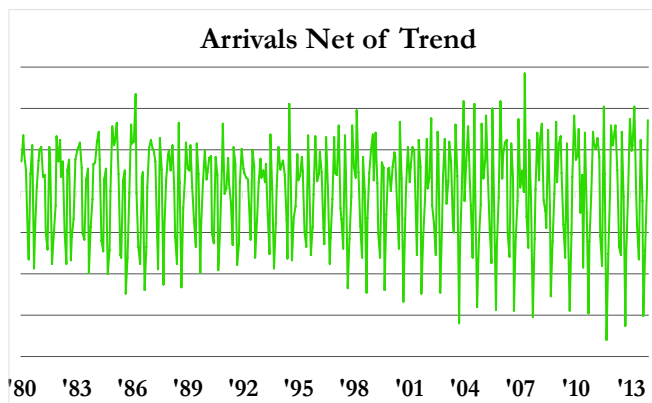
Panel A:

Total arrivals have been trending upwards since 1980



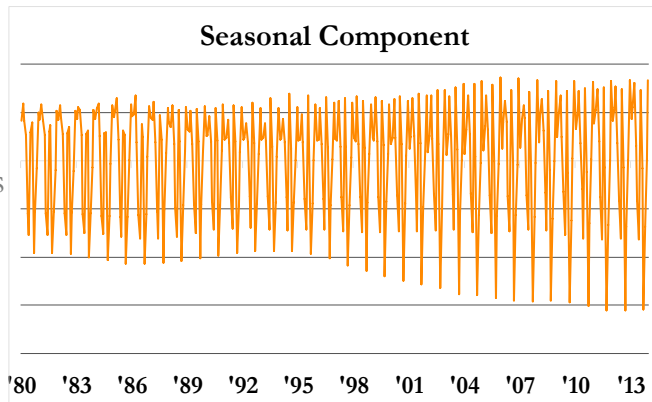
Panel B:

When the trend is removed, what is left is the sum of the seasonal and irregular components, which are then separated and displayed in Panels C and D



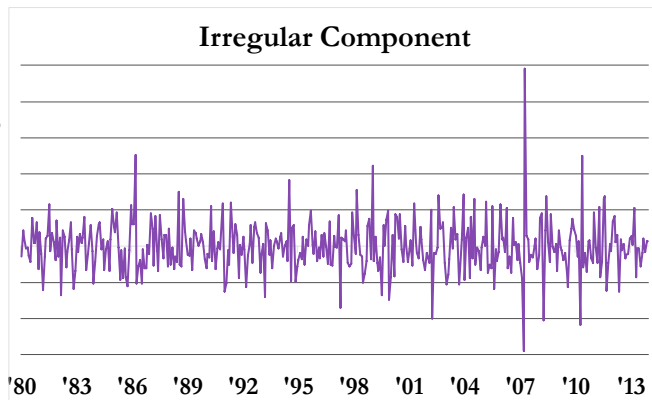
Panel C:

The seasonal component, on the other hand, can be predicted and the widening of the peaks and troughs suggests that the seasonal component has been changing



Panel D:

The irregular component is difficult to predict because it is the result of ad hoc events



Source: Central Bank of Barbados and Antilles Economics

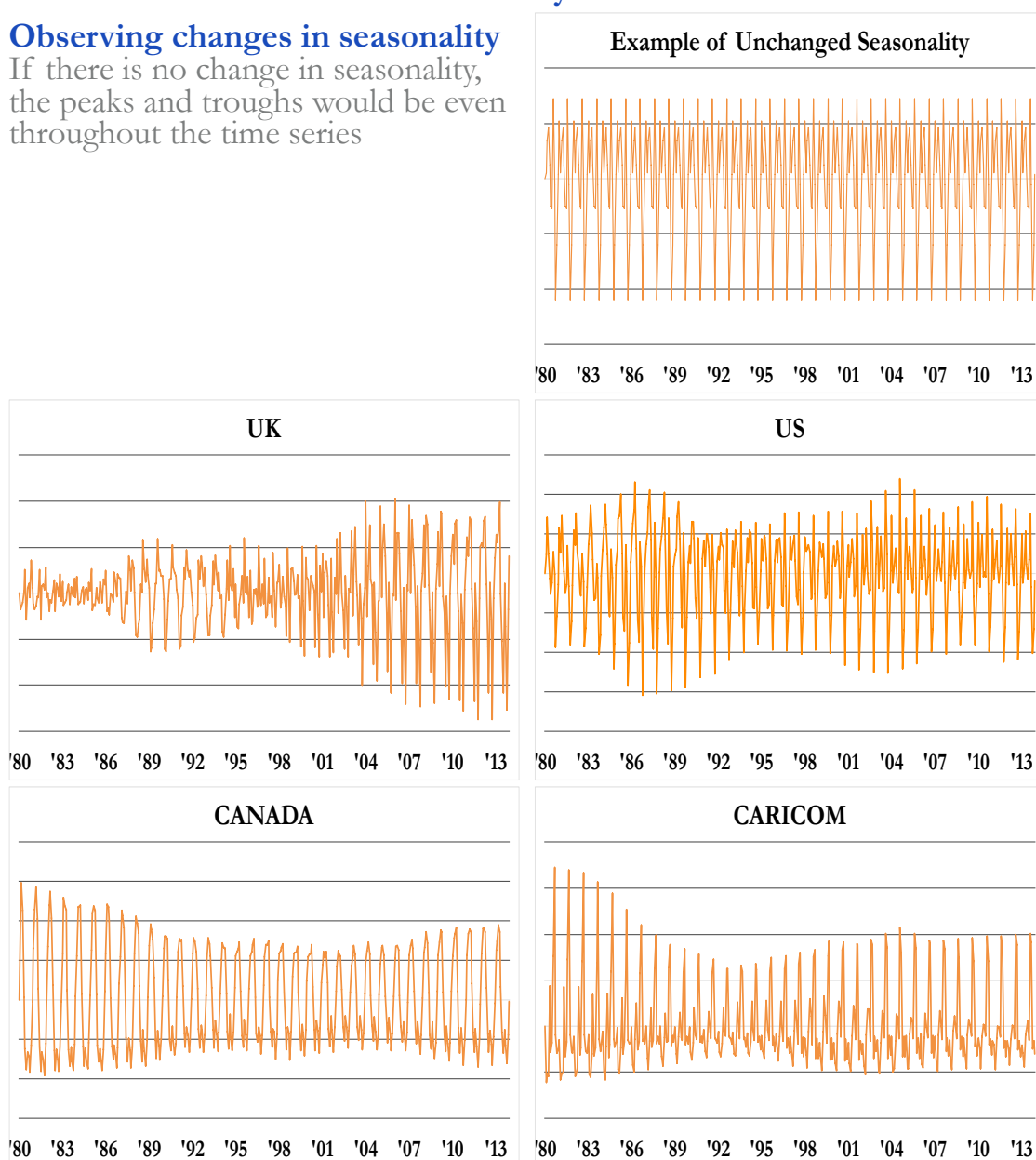
what the trend value would estimate. So each year, when forecasting arrivals, the researcher could simply add an additional 5000 tourists for March to his/her estimate. However, looking at the seasonal component in Panel C, the size of the peaks and troughs appear to be changing. Hence, the assumption that the seasonal component is constant could lead to forecast errors. Finally, Panel D plots the irregular component, i.e. what remains after the seasonal and trend components of tourist arrivals series have been removed. Most noticeable is the peak in April, 2007, which

Exhibit 4

The seasonal components of each source market suggest that there has been some variation in seasonality over time

Observing changes in seasonality

If there is no change in seasonality, the peaks and troughs would be even throughout the time series



Source: Antilles Economics

reflects the uptick in tourist arrivals for the Cricket World Cup that was held in the region in 2007.

Overall Exhibit 4 tells a similar story to Exhibit 2: arrivals from the UK, US and Canada are mostly influenced by climatic cycles, peaking in the ‘winter’ months. However, arrivals in CARICOM seem to be concentrated in the ‘summer’ months, possibly due to the Crop Over Festival. More importantly, Exhibit 4 suggests that there is some variation in seasonality for each market.

Exhibits 5 to 8 provide a more detailed breakdown of the seasonal patterns by plotting the seasonal estimates by month. The horizontal line represents the trend. If the seasonal value is on the line, there is no seasonal component in that period and arrivals are determined by the underlying trend in the series. If the seasonal value is above/below the line, then there were more/fewer arrivals than can be explained by the trend alone. If over time the seasonal value is persistently above/below the line, and/or if the distance between the seasonal component and the trend is widening, then there is a case for reexamining long-held assumptions on the seasonal patterns in arrivals.

Looking first at the seasonal patterns in UK arrivals (Exhibit 4), the patterns suggest that between 1985 and 1994 the seasonal fluctuations became more pronounced, as evidenced by a significant increase in the size of the peaks and troughs. By the mid-1990s, the magnitude of the peaks and troughs leveled off slightly, before exploding again in the 2000s.

As shown in Exhibit 5, variations in the patterns of the winter months and the months of the third quarter seem to be the main drivers of these changes. Between 1980 and 1990, the January to March months (which today is registered as a peak quarter) stood well below the trend. Simply put, back then, it seems that these months were actually off peak months.. However, in the early 1990s, we see the first quarter starting to gain significance. An increasing number of tourists began traveling to Barbados during this quarter, and by the next decade, this quarter had become one of the peak quarters for UK arrivals.

While the first quarter was gaining significance, the third quarter was losing significance. Particularly during the 1990s, the months of August and September began their transition from being roughly ‘around trend’ months to their current status of ‘off-peak’ months. The significance of July also tapered, but arrivals in July still remain slightly above trend, probably

reflecting tourists who travel to participate in Barbados' largest national festival, Crop Over.

Finally, for most of the period, November and December were peak months, and the significance of those peaks are much greater now than they were in the 1980s. This may imply that the 'winter season' for tourist arrivals from the UK now starts in November rather than December as commonly thought, and extends til March rather than April.

Unlike the UK, seasonal patterns in the US (particularly, the importance of the winter months) were more pronounced in the early 1980s (Exhibit 4). For instance, in 1980, US arrivals in January were roughly 15.5 percent above trend estimates and by 1986 arrivals in January were 25.9 percent above the trend. However, the seasonal peaks and troughs did not continue to explode; rather, seasonal patterns have stabilised somewhat as January to March have lost much of their significance - for example, in January 2013, US arrivals were about 2.9 percent below the trend estimate - and some summer months have increased in significance (see Exhibit 6).

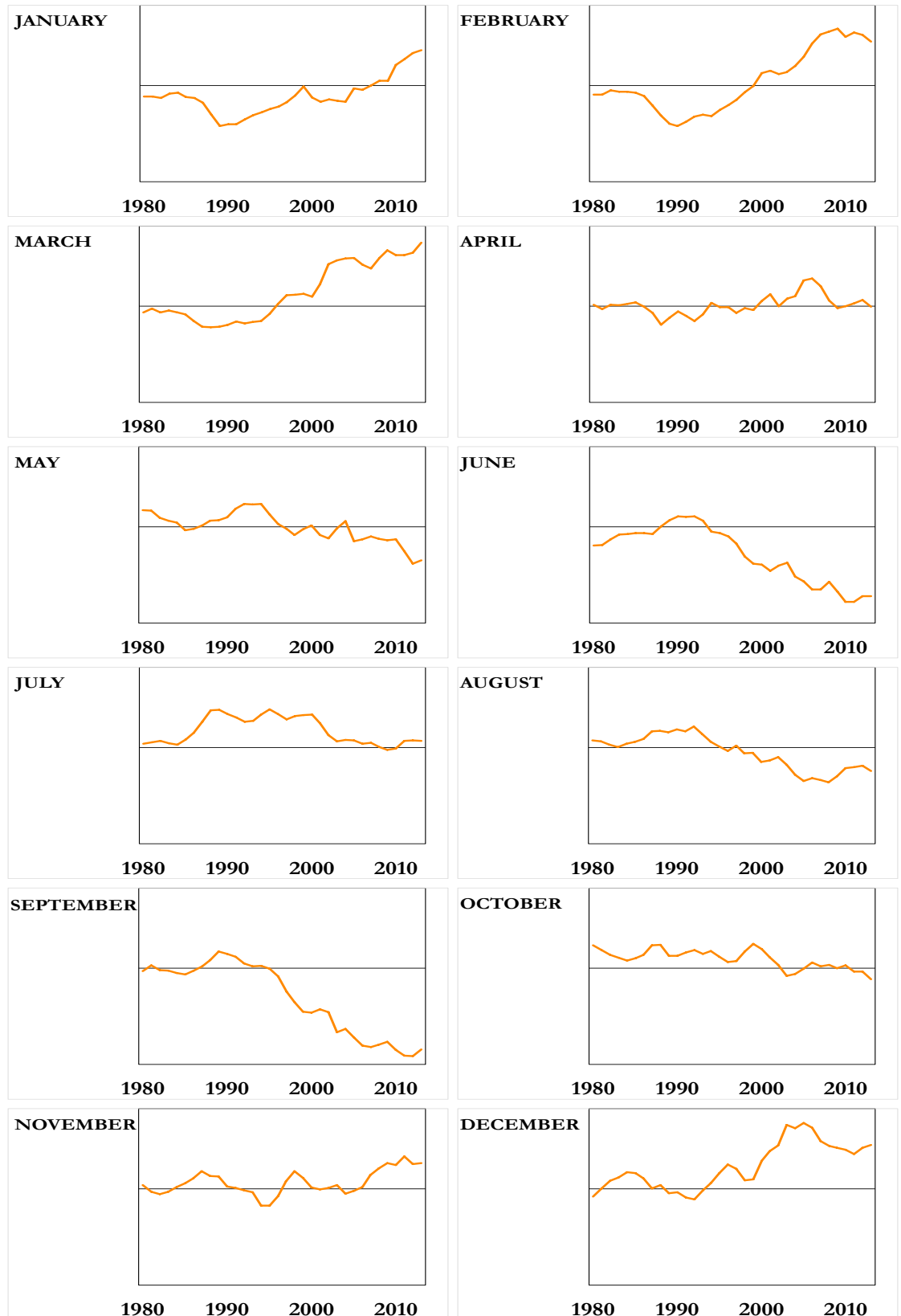
Turning now to the case of Canada, the seasonal patterns are much less pronounced now than they were in the 1980s (Exhibit 4). For this market, the size of seasonal fluctuations actually narrowed between 1980 and 2005. Thereafter, they increased slightly, but are still substantially below the 1980s. Looking at the monthly breakdown (Exhibit 7), the January-March months appear to be the main drivers of the observed changing seasonal patterns in Canadian arrivals.

As mentioned previously, the case of CARICOM is unique. Unlike the UK, US and Canadian markets, seasonal fluctuations are not climatic but cultural, as peak months tend to coincide with the Crop Over Festival. But, like the Canadian market, seasonality has become less pronounced over the last 33 years (Exhibit 4). Largely, the month of August lost some of its significance between 1980 and 1992 (Exhibit 8), while March, which has historically been characterised as "off-peak", seems to be gaining significance. For instance, in 1980, CARICOM arrivals in March were about 35 percent below trend. As at 2013, the results suggest that arrivals in March were only 6 percent below trend values. This could be due to CARICOM nationals visiting during Easter (between Good Friday and Easter Monday) possibly to attend the Barbados Reggae Festival that is held at this time.

Exhibit 5

Seasonality of UK arrivals points to the ‘peak’ period shifting from December-April to November-March

on the line = no seasonal variation; above the line = above trend; below the line = below trend

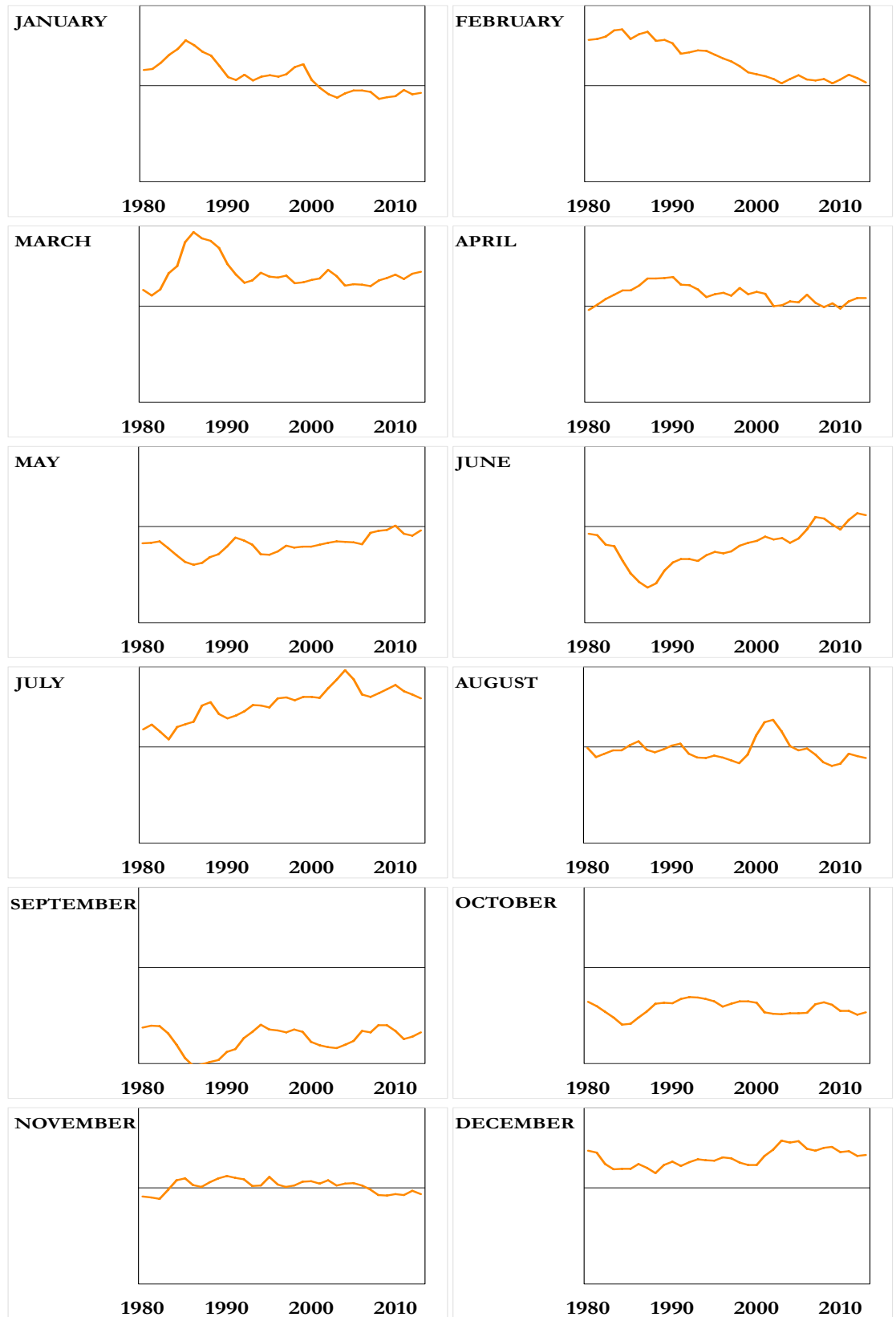


Source: Antilles Economics

Exhibit 6

Arrivals from the USA appear to be losing their seasonality, except March, July and September, which remain above trend, and September and October, which remain below trend

on the line = no seasonal variation; above the line = above trend; below the line = below trend

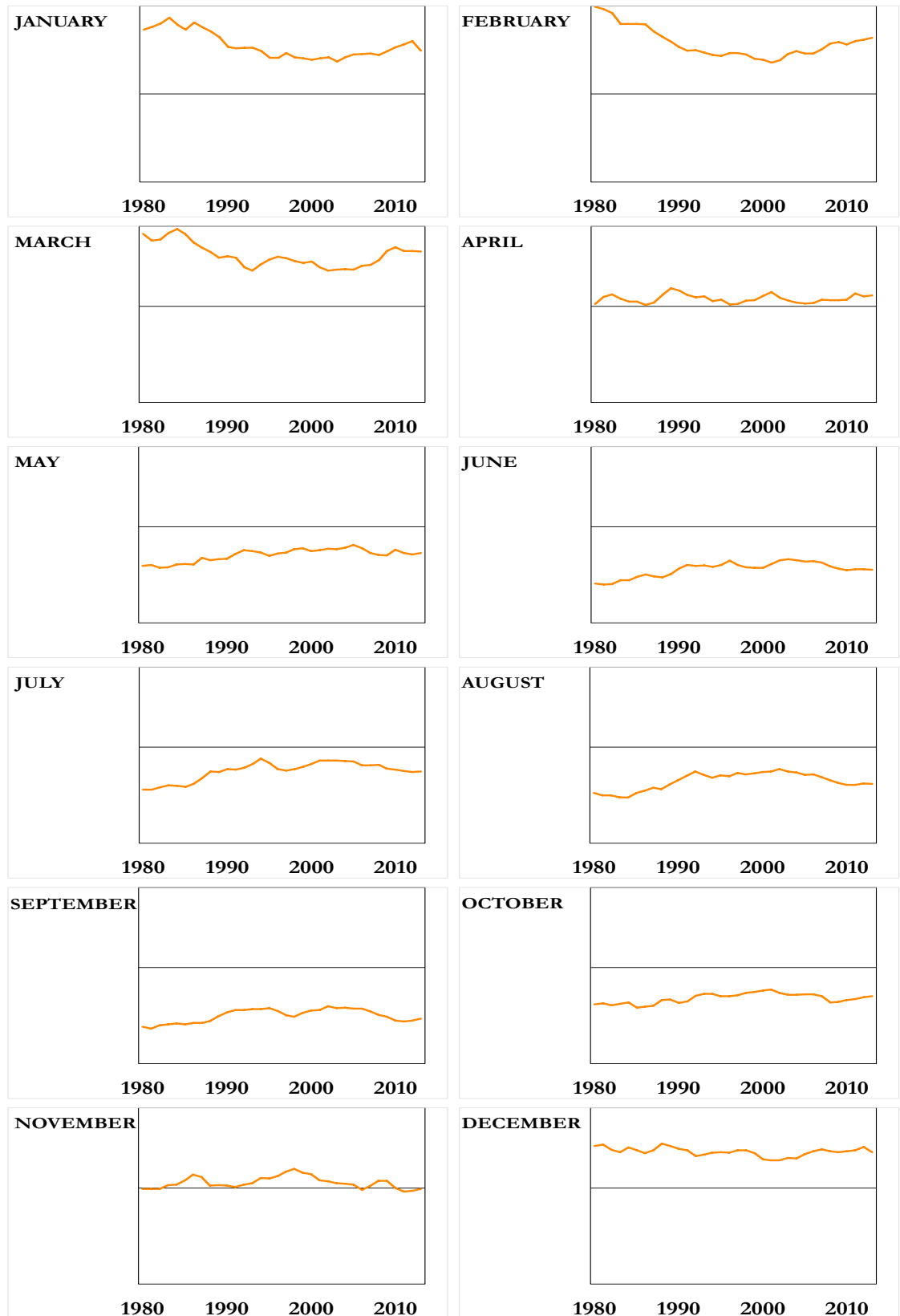


Source: Antilles Economics

Exhibit 7

Canadian arrivals display the traditional ‘winter season’ uptick in arrivals, though the size of the seasonal components for these months are lower than in the 1980s

on the line = no seasonal variation; above the line = above trend; below the line = below trend

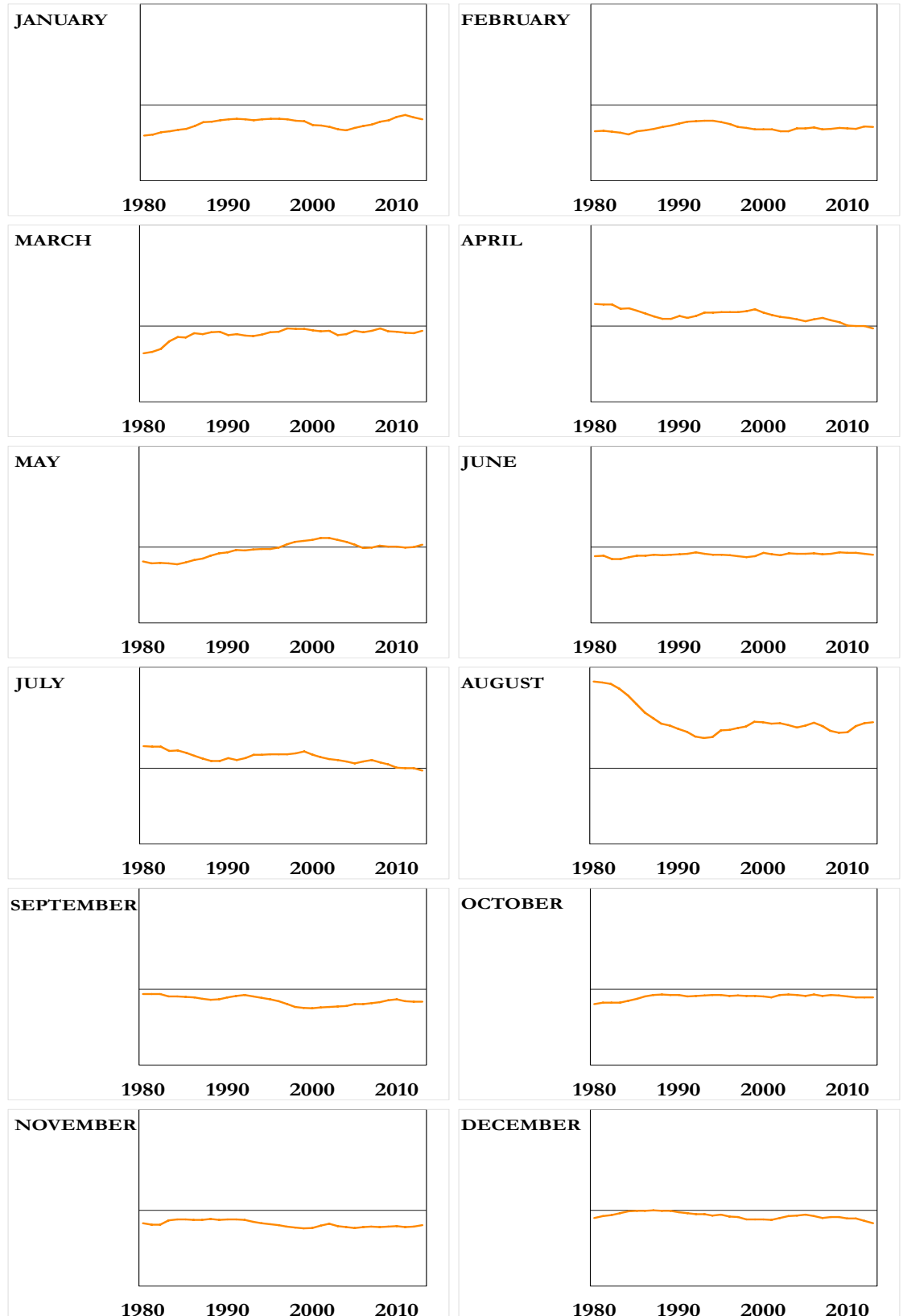


Source: Antilles Economics

Exhibit 8

CARICOM arrivals for most months are roughly ‘on trend’ with the exception of August, where there is a strong positive seasonal component

on the line = no seasonal variation; above the line = above trend; below the line = below trend



Source: Antilles Economics

Conclusion

Our assumptions about seasonal variations in tourist arrivals influence how we run our businesses. We time our marketing campaigns around when we expect potential visitors to be planning their trips. We renovate our establishments and trim our staff complement when we expect the least amount of visitors to our properties. If our assumptions no longer hold, this has implications for how many tourists are exposed to our advertisements and the quality of their experience when they arrive.

Beyond the business implications, these changes also challenge our beliefs on why tourists visit Barbados. For example, while the Crop Over Festival appears to be the main driver of CARICOM tourists in July/August and over the last 23 years has become increasingly important in attracting US tourists, it is no longer an important consideration for visitors from the UK and was never important for Canadian tourists. We have also observed that ‘winter season’ for UK tourists may be shifting from December – April to November – March, and that CARICOM visitors are increasingly visiting in March. Observing changes in seasonality could also provide insights on whether other events - such as the Food, Wine and Rum Festival and Rally Barbados - are becoming drivers of tourist arrivals to Barbados.

This type of analysis is but one aspect of tourism demand and is by no means conclusive. Nonetheless, armed with these insights, decision-makers can ensure that their operations are tuned to take full advantage of their chosen markets.

About the Authors:

Stacia Howard

showard@antilleseconomics.com

is the Managing Director of Antilles Economics. She is the leader of the Market Intelligence, Strategy Development and Macroeconomic Surveillance and Forecasting areas of the company. She specialises in helping organisations incorporate macroeconomic and industry trends into corporate strategy.

Mahalia Jackman

mjackman@antilleseconomics.com

is the Head of Model Development at Antilles Economics. A prolific researcher, she not only drives the development of the forecast models, but is also developing the social intelligence of Antilles Economics. Mahalia is currently pursuing her PhD in Applied Social Research.

