

## Polish fresh chicken imports into the UK

### Required libraries

```
require("RPostgreSQL")

## Loading required package: RPostgreSQL

## Loading required package: DBI

library(ggplot2)
library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

library(tidyverse)

## — Attaching packages —————
tidyverse 1.2.1 —

## ✓ tibble 1.4.2      ✓ purrr 0.2.4
## ✓ tidyr 0.8.0       ✓ stringr 1.3.0
## ✓ readr 1.1.1      ✓ forcats 0.3.0

## — Conflicts —————
tidyverse_conflicts() —
## ✗ dplyr::filter() masks stats::filter()
## ✗ dplyr::lag() masks stats::lag()
```

### Get the HMRC auxiliary data

```
source("get_HMRC_aux_data.R")
list1 <- get_HMRC_aux_data()
comcode <- data.frame(Reduce(rbind, list1[1]))
port <- data.frame(Reduce(rbind, list1[2]))
country <- data.frame(Reduce(rbind, list1[3]))
```

## Find fresh chicken comcodes - Thank you Alex for making life nice and easy for us!

```
cc_all_chicken <- comcode[grep('CHICKEN', toupper(comcode$description)),]
```

## Get HMRC import data from EU (arrivals df)

```
source("get_HMRC_data.R")
HMRC_EU_import_food_data <- get_HMRC_data(arrivals)

## [1] "Medium cuppa?"

(col_names <-
t(as.data.frame(colnames(HMRC_EU_import_food_data))))

##           [,1]      [,2]
## colnames(HMRC_EU_import_food_data) "smk_comcode" "smk_record_type"
##           [,3]      [,4]
## colnames(HMRC_EU_import_food_data) "smk_cod_seq" "smk_cod_alpha"
##           [,5]      [,6]
## colnames(HMRC_EU_import_food_data) "smk_trade_ind" "smk_coo_seq"
##           [,7]
## colnames(HMRC_EU_import_food_data) "smk_coo_alpha"
##           [,8]
## colnames(HMRC_EU_import_food_data) "smk_nature_of_transaction"
##           [,9]
## colnames(HMRC_EU_import_food_data) "smk_mode_of_transport"
##           [,10]
## colnames(HMRC_EU_import_food_data) "smk_period_reference"
##           [,11]      [,12]
## colnames(HMRC_EU_import_food_data) "smk_suite_indicator" "smk_sitc"
##           [,13]
## colnames(HMRC_EU_import_food_data) "smk_ip_comcode"
##           [,14]
## colnames(HMRC_EU_import_food_data) "smk_no_of_consignments"
##           [,15]      [,16]
## colnames(HMRC_EU_import_food_data) "smk_stat_value" "smk_netts_mass"
##           [,17]
## colnames(HMRC_EU_import_food_data) "smk_supp_unit"
```

## Select Poland fresh chicken import info

```
HMRC_columns <- col_names[c(1,4,10,14,15,16)]
HMRC_country <- "PL"
HMRC_comcode <- "02071110"
model_data <- HMRC_EU_import_food_data %>%
  select(HMRC_columns) %>%
filter(smk_cod_alpha == HMRC_country & smk_comcode ==
HMRC_comcode) %>%
  select(-smk_cod_alpha, -smk_comcode)
```

## Clean data: remove any Na values, 0 values and date values == "0000000"

```
model_data_clean <- model_data %>% na.omit %>%  
  filter(smk_nettt_mass!=0 & smk_no_of_consignments != 0 &  
smk_stat_value != 0) %>%  
  filter(smk_period_reference!="0000000") %>%  
  mutate(abs(smk_nettt_mass) & abs(smk_no_of_consignments) &  
abs(smk_stat_value)) %>%  
  unique()
```

## Convert period column to date format

```
model_data_clean <- model_data_clean %>%  
  mutate(smk_period_reference =  
substr(smk_period_reference, 4,7)) %>%  
  mutate(smk_period_reference =  
paste0(smk_period_reference, "01")) %>%  
  mutate(smk_period_reference =  
as.Date(smk_period_reference,  
"%y%m%d"))
```

## Get the cos/kg (\$/kg)

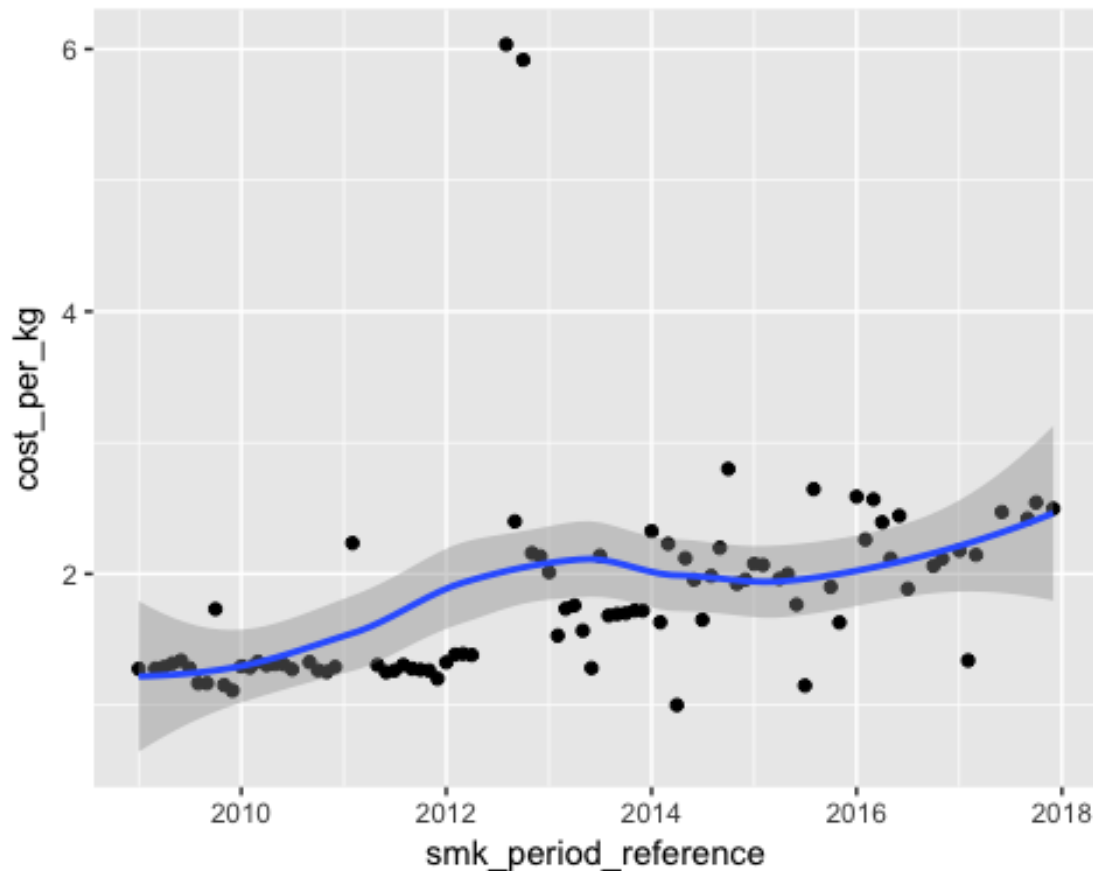
```
model_data_clean <- model_data_clean %>%  
  mutate(cost_per_kg = smk_stat_value / smk_nettt_mass)
```

## Aggregate data into periods of months

```
model_data_group <- model_data_clean %>% group_by(smk_period_reference) %>%  
  summarise(smk_nettt_mass = sum(smk_nettt_mass),  
smk_no_of_consignments = sum(smk_no_of_consignments),  
smk_stat_value = sum(smk_stat_value),  
cost_per_kg = mean(cost_per_kg))
```

## What does the cost/kg of the Polish fresh chicken imported into the UK look like over time?

```
ggplot(model_data_group, aes(smk_period_reference, cost_per_kg)) +  
  geom_point() +  
  geom_smooth()  
  
## `geom_smooth()` using method = 'loess'
```



Cost/kg appear to be tightly grouped at lower cost from 2009 - midway 2012 and have more variance thereafter with an increase in price. Appears there are two tiers of pricing during the respective time frames

## Calculate variance between two halves of cost/kg over two time periods

```
(var_2009_2012 <- var(model_data_group %>% filter(smk_period_reference <
"2012-06-01") %>% select(cost_per_kg)))

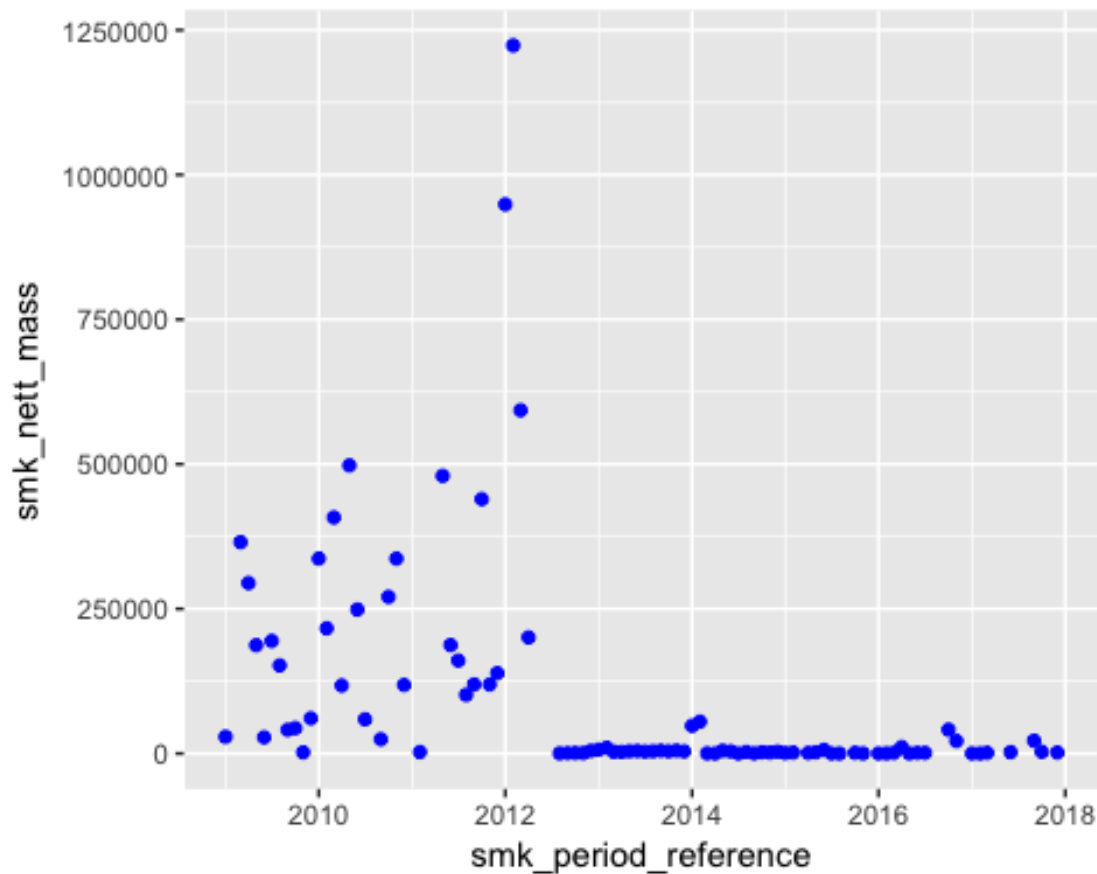
##           cost_per_kg
## cost_per_kg  0.03493561

(var_2012_2017 <- var(model_data_group %>% filter(smk_period_reference >
"2012-06-01") %>% select(cost_per_kg)))

##           cost_per_kg
## cost_per_kg  0.7198691
```

## What does the nett mass of Polish fresh chicken imported into the UK look like over time?

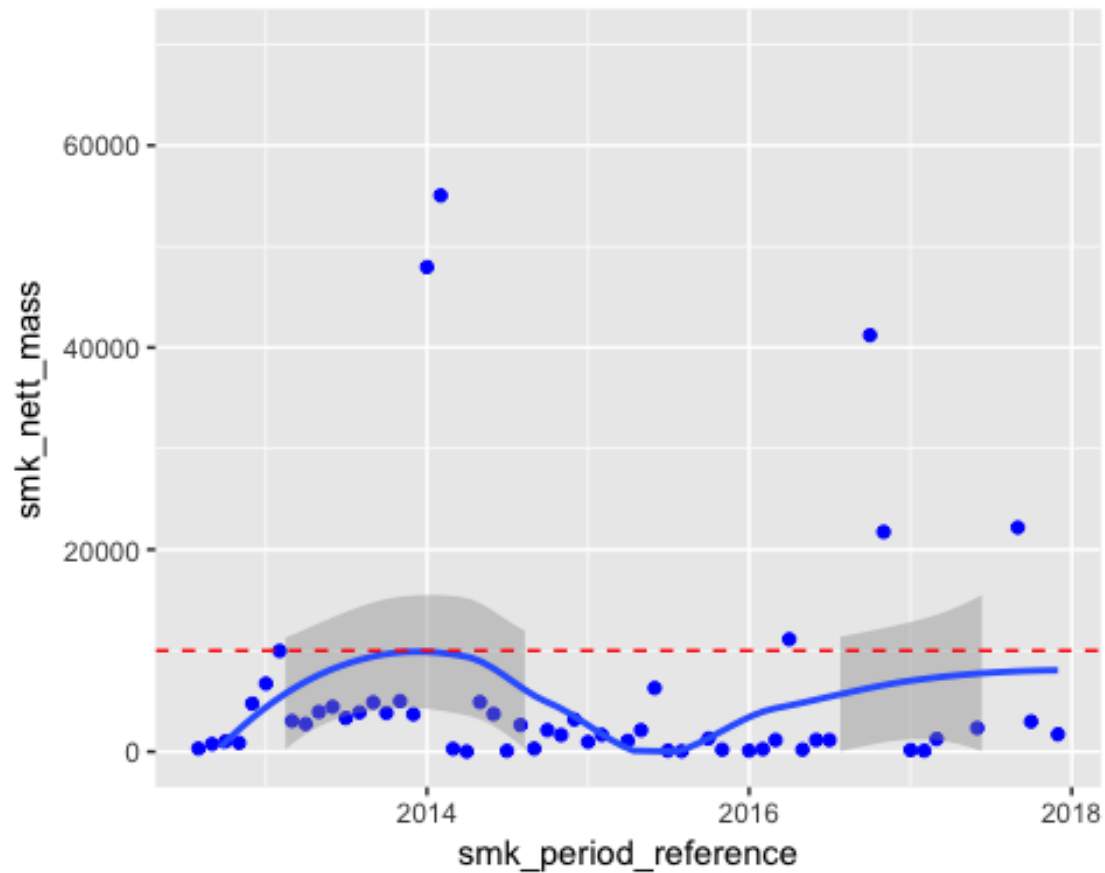
```
ggplot(model_data_group, aes(sm_k_period_reference, sm_k_net_t_mass)) +  
  geom_point(colour = "blue")
```



- Imports of chicken very irregular and larger nett mass from 2009 - midway 2012. \*  
Midway 2012 - 2017 much more regular and significantly less imported

## What does the nett mass of Polish fresh chicken imported into the UK look like between mid 2012 - current?

```
ggplot(model_data_group %>% filter(sm_k_period_reference > "2012-06-01"),  
  aes(sm_k_period_reference, sm_k_net_t_mass)) +  
  geom_point(colour = "blue") +  
  ylim(0, 70000) +  
  geom_smooth() +  
  geom_hline(yintercept=10000, linetype="dashed", color = "red")  
  
## `geom_smooth()` using method = 'loess'
```

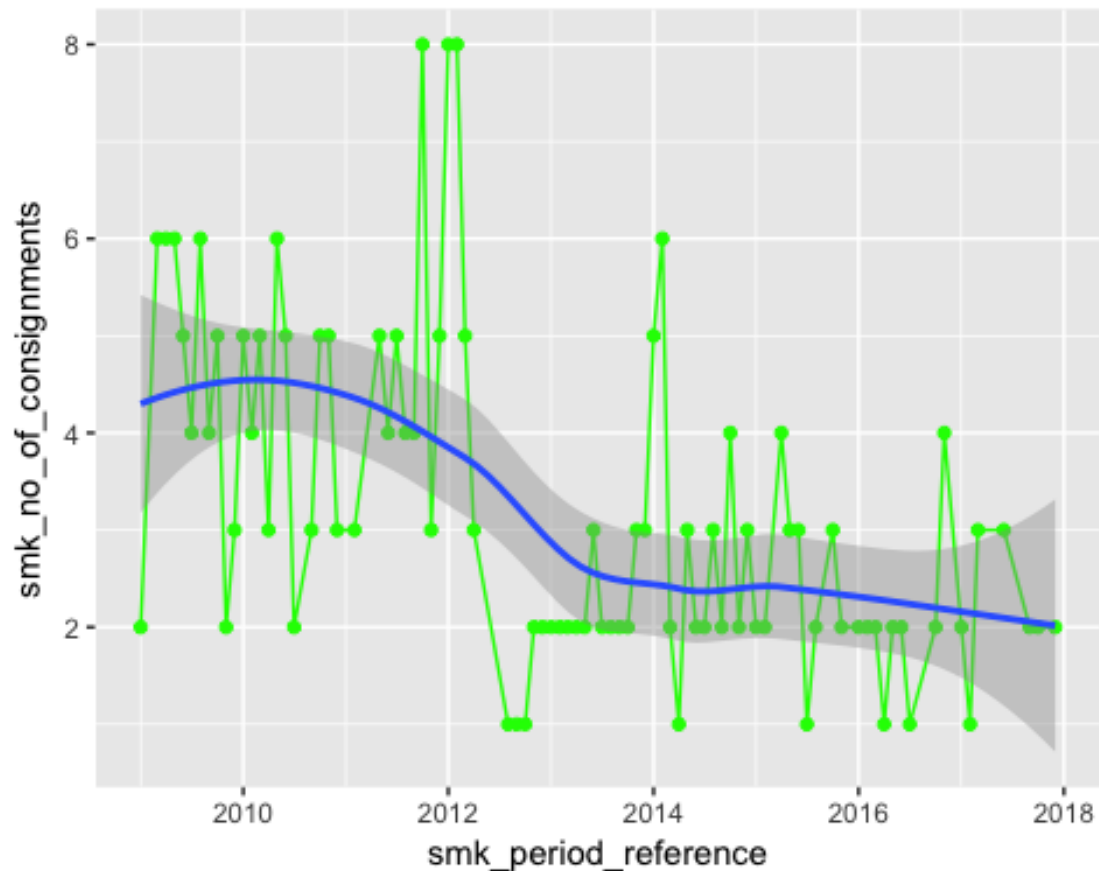


\* Some

outliers still observed

### Did the number of consignments also increase during the spikes?

```
ggplot(model_data_group, aes(smk_period_reference, smk_no_of_consignments)) +  
  geom_line(colour = "green") +  
  geom_point(colour = "green") +  
  geom_smooth()  
  
## `geom_smooth()` using method = 'loess'
```



\*

Opposite relationship observed compared to cost/kg trend over time

## Conclusions and questions

- Patterns of fresh chicken imports from Poland have changed dramatically after midway 2012
- Where did all the extra chicken come from - especially between 2009 and midway 2012?
- Still some anomalies of fresh chicken imports in recent time