

Global spending patterns oncology medications, past and future

IHEA 2017, Boston

Richard Manning, PhD

Fred Selck, PhD

July 9, 2017

Is spending on cancer medicines *unsustainable*?

Blood. 2013 May 30;121(22):4439-42. doi: 10.1182/blood-2013-03-490003. Epub 2013 Apr 25.

The price of drugs for chronic myeloid leukemia (CML) is a reflection of the *unsustainable* prices of cancer drugs: from the perspective of a large group of CML experts.

Experts in Chronic Myeloid Leukemia.

NEW YORK

The Cost of Living

“Everybody agrees: The prices are *unsustainable*,” Saltz said. “And I often try to invite myself or people having these discussions to complete the thought: If it’s unsustainable, what happens when it’s unsustainable? Do we have an adjusted, steady correction? Or do we have an implosion and a crash?”

Source: Stephen S. Hall, “The Cost of Living”, New York Magazine, Oct 20, 2013. Quote from Leonard Saltz, head of the gastrointestinal oncology group at Memorial Sloan-Kettering Cancer Center.

Executive summary

- Cancer is a complex set of diseases, not a single disease with a single treatment
 - Medicine remains in the early stages of treating many cancers and unmet needs continue to stimulate innovation-driven growth in spending
- Based on a high level review in the US and six major markets, spending on oncology medicines does **not** appear to be unsustainable from a health system perspective
 - Patterns of spending are in many ways similar to those of other classes of medications
 - The size of the oncology class is not out of line with other product classes (e.g. cholesterol lowering agents) that peaked, then experienced dramatic spending reductions after loss of exclusivity
 - However, oncology is not yet a “mature” disease state and many have concerns about spending impact of recent and future innovations
- There is a sizeable forthcoming ‘patent cliff’ for oncology medicines
 - However, a large share of innovative oncology medicines are biologics
 - ◆ When will biosimilars truly start to make inroads into the US and other major international markets?
 - ◆ How large will their impact on total spending be?

Outline

- Spending on oncology medicines in context
 - Oncology, health spending, and GDP in the US and six major markets
- Medicine spending patterns after Loss Of Exclusivity (LOE)
 - US Antiulcer and Cholesterol Lowering examples
- Spending by oncology category: 2001 – 2015
 - Cytotoxics, Hormonals, and Targeted therapies in the US and six major markets
- Oncology medicine patent expirations in the US
 - Historical experience and future projections
- Conclusions

Spending on oncology medicines in context

Oncology, health spending, and GDP in the US and
six major markets

Cancer consists of more than 100 different diseases

Cancer

“uncontrolled growth and spread of abnormal cells”

Carcinoma

(epithelial tissue)

80-90% of all cancer cases

Sarcoma

(supportive /
connective
tissue)

Myeloma

(plasma
cells of
bone
marrow)

Leukemia

(bone
marrow)

Lymphoma

(nodes of the lymphatic system)

Mixed Types

Adeno-
carcinoma

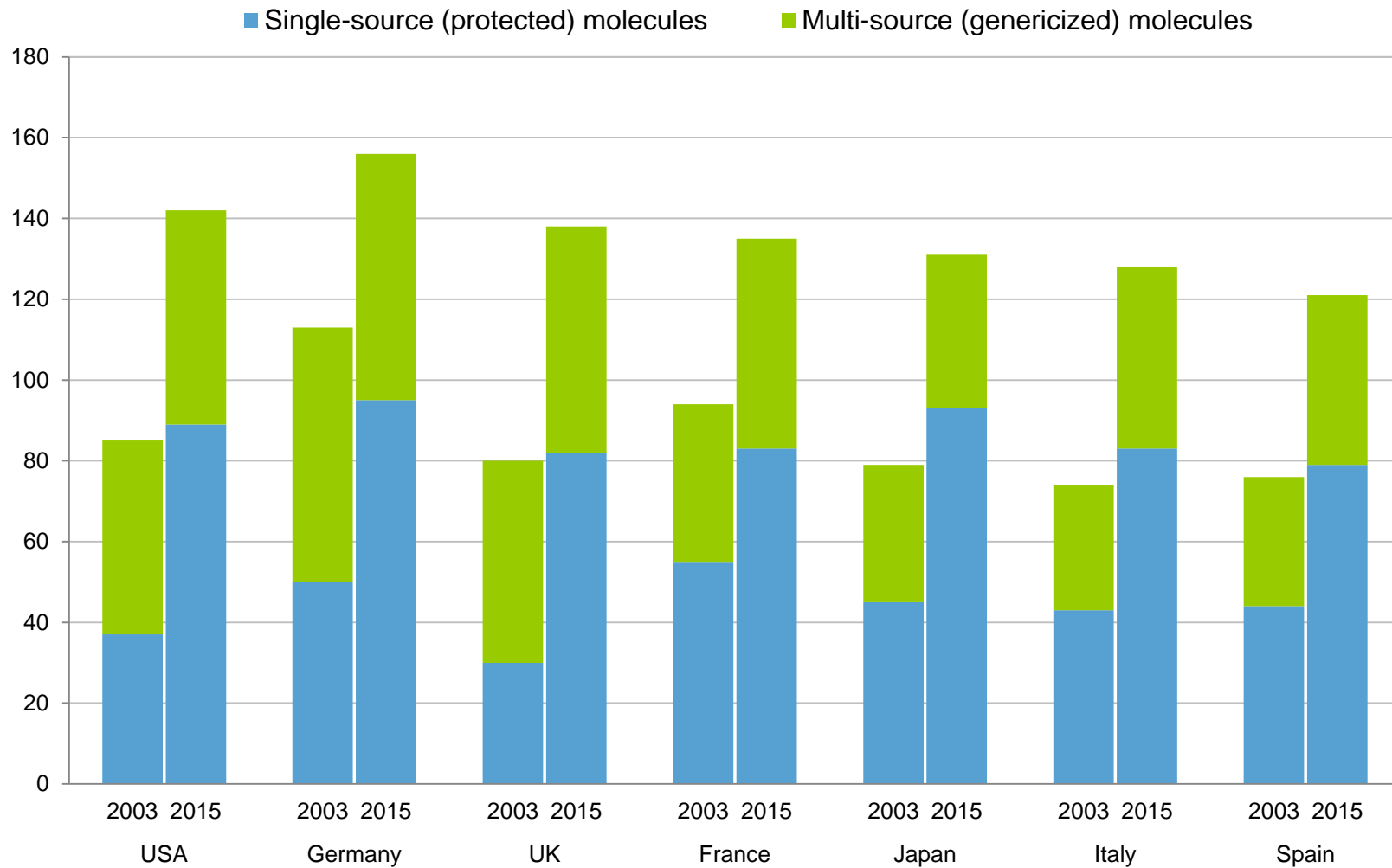
Squamous
cell
carcinoma

Hodgkin
lymphoma

Non-
Hodgkin
lymphoma

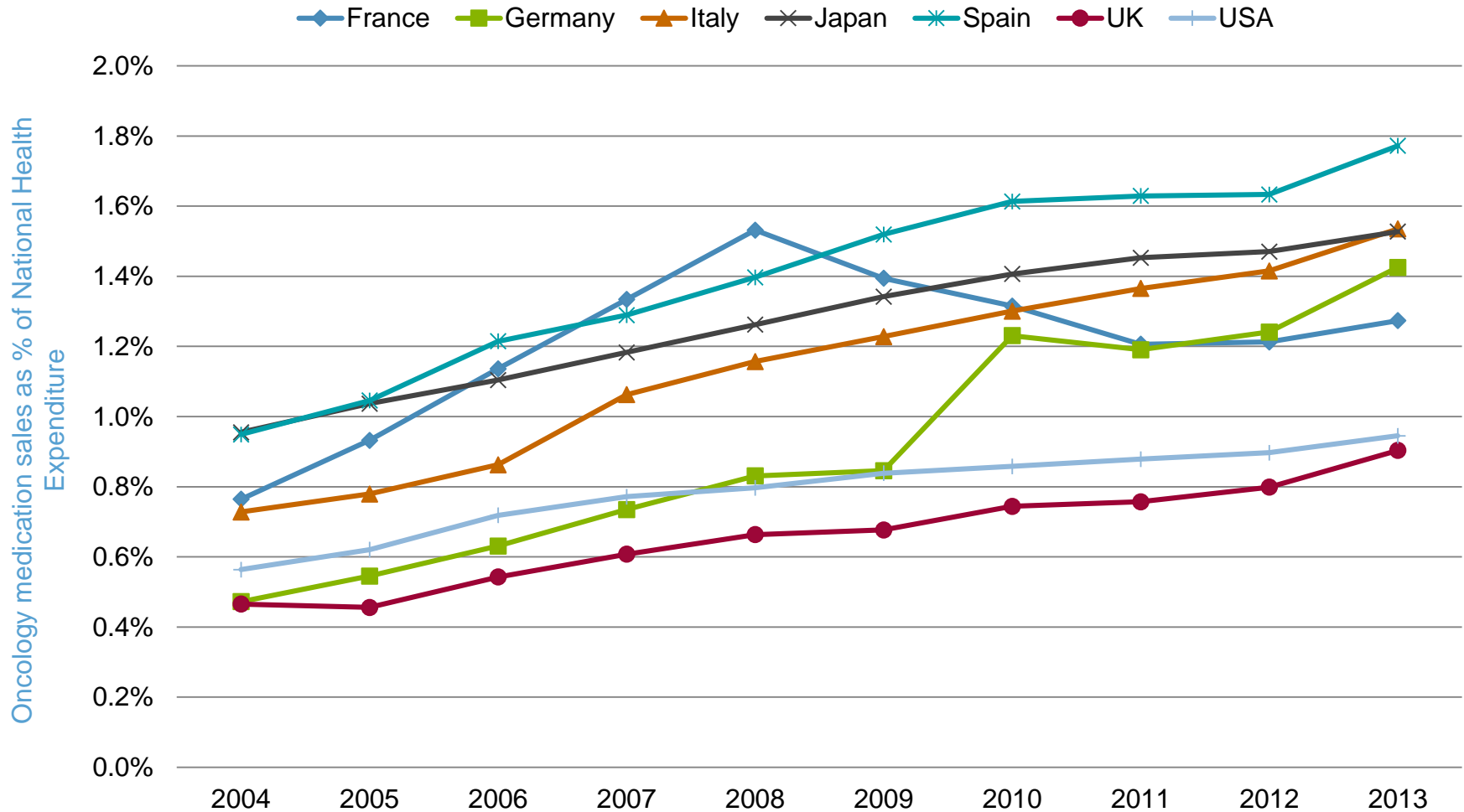
Source: National Cancer Institute, SEER Training Modules, <http://training.seer.cancer.gov> (accessed 1/13/2015)

The number of molecules identified as oncology therapies has grown substantially over the past 12 years



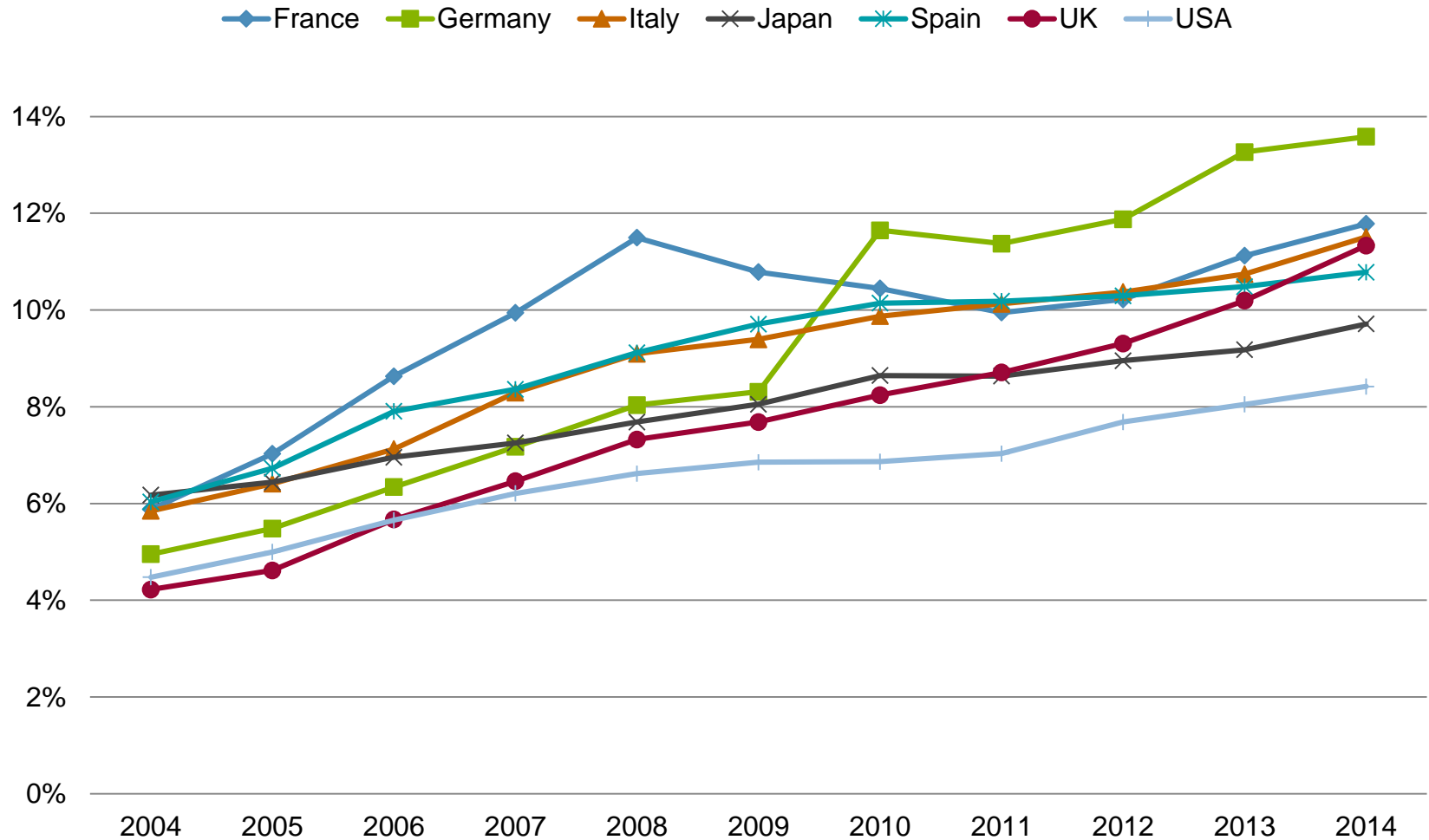
Source: IMS Health; World Bank. Note that the countries are ordered by GDP/capita, highest is to the left.

As a share of total health expenditures, oncology medication spending has approximately doubled over the past decade, now clustered around 1.3%



Source: IMS Health; World Bank; Increase in percentage for Germany from 2009 to 2010 due to the addition of injectable drugs in the data

Through 2014, oncology drug spending as share of total Rx spending remained below 14% across major markets



Source: IMS Health

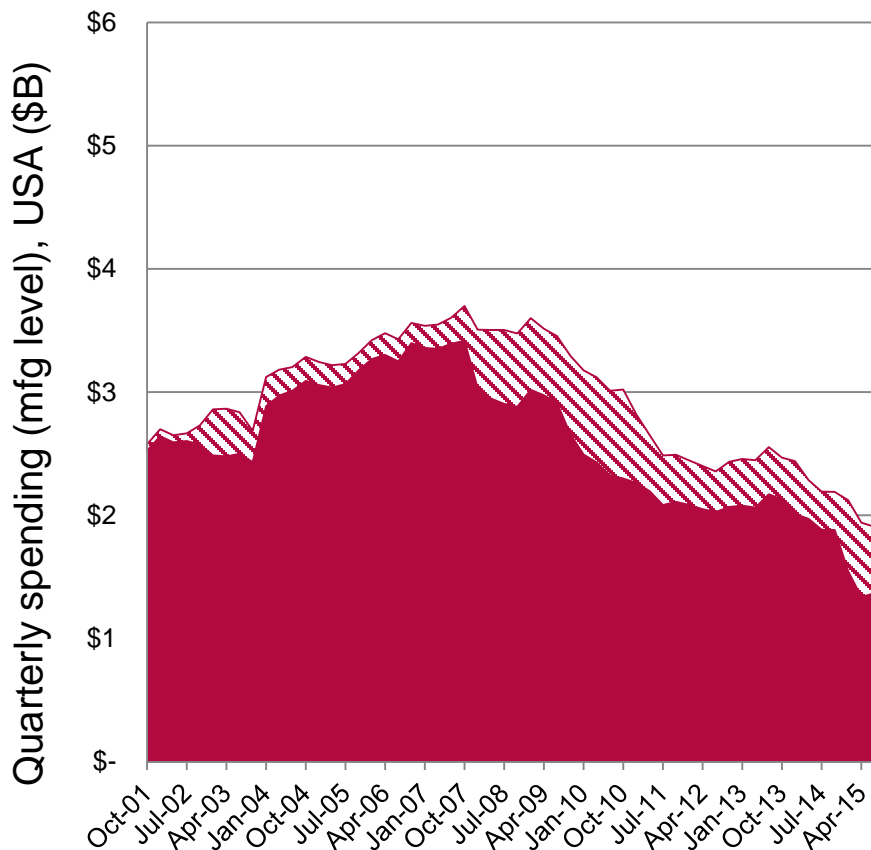
Drug spending patterns after Loss Of Exclusivity (LOE)

US Antiulcer and Cholesterol Lowering examples

When brands lose exclusivity, total spending falls as generics dominate the class: Antiulcer and Cholesterol Lowering examples (quarterly spend)

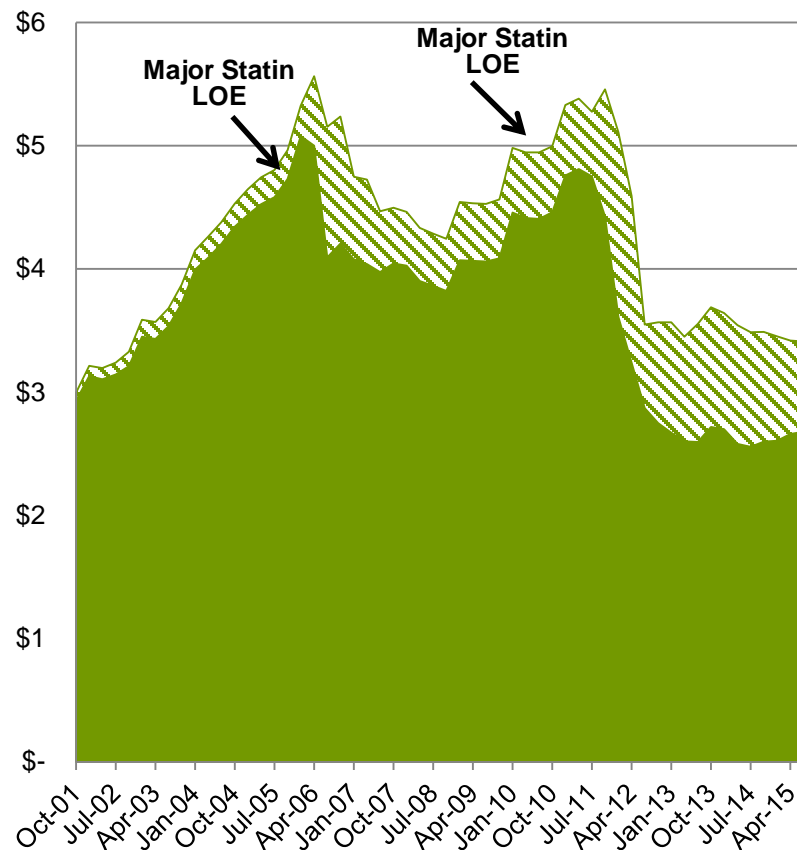
Brand drugs Generic drugs

Antiulcer Drugs



Brand drugs Generic drugs

Cholesterol Lowering Agents





Source: IMS Health; Antiulcer class includes H2 and PPI classes; Cholesterol lowering class includes statins and other agents

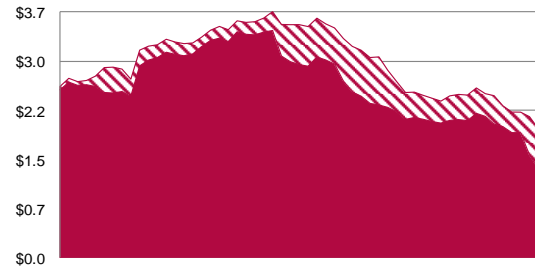
US brand/generic spending compared to other major markets

Antiulcer medications (quarterly spend)

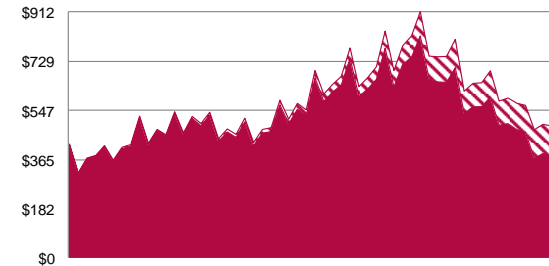
- Antiulcer medications as defined by IMS – includes both H2 and PPI product classes
- Quarterly spend measured at manufacturer level (excluding off-invoice rebates/discounts)
- Data runs from 4Q 2001 to 3Q 2015

 Generic drugs
 Brand drugs

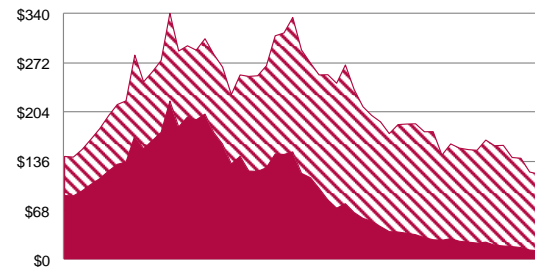
USA (\$B)



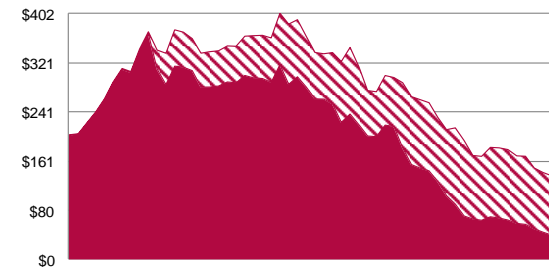
Japan (\$M)



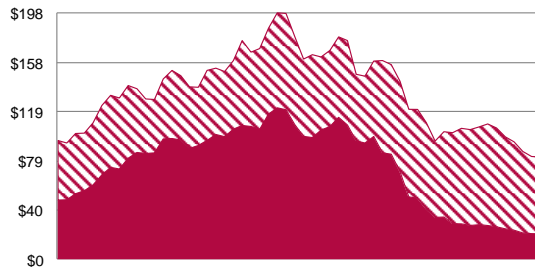
Germany (\$M)



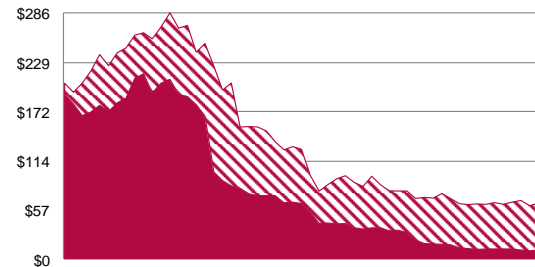
France (\$M)



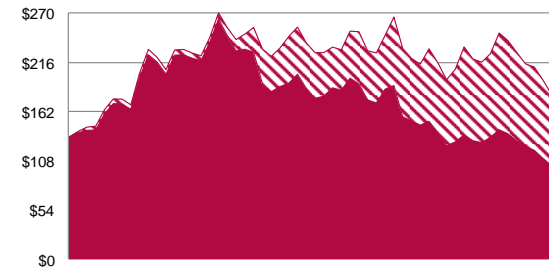
Spain (\$M)



UK (\$M)





Italy (\$M)



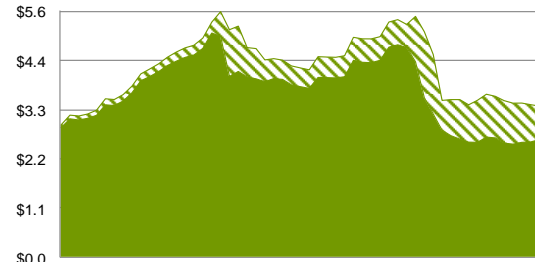
US brand/generic spending compared to other major markets

Cholesterol medications (quarterly spend)

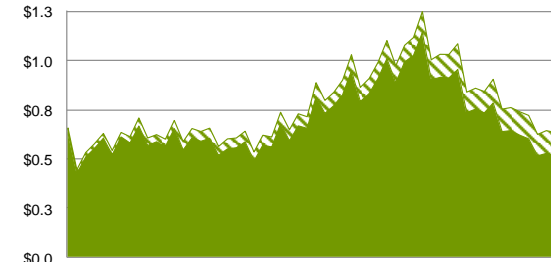
- Cholesterol Lowering agents as defined by IMS Health – includes statins and other approved agents
- Quarterly spend measured at manufacturer level (excluding off-invoice rebates/discounts)
- Data runs from 4Q 2001 to 3Q 2015

 Generic drugs
 Brand drugs

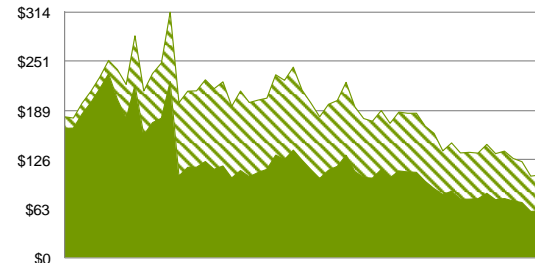
USA (\$B)



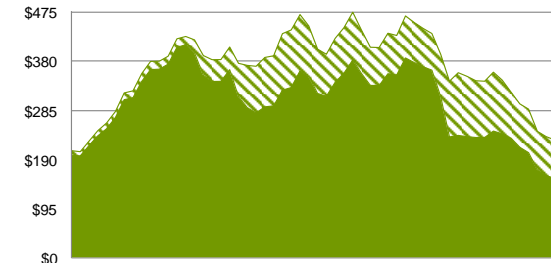
Japan (\$B)



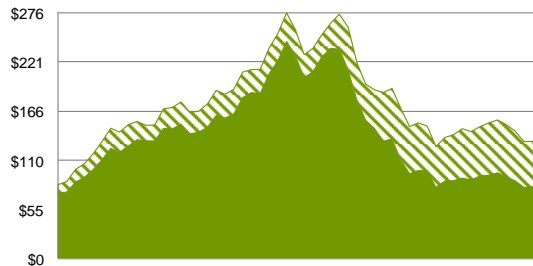
Germany (\$M)



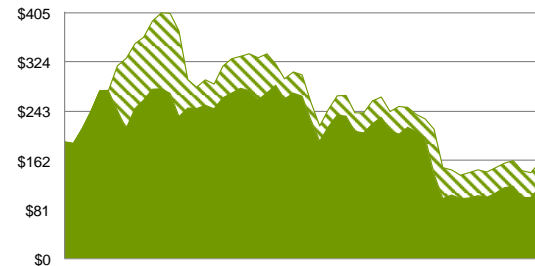
France (\$M)



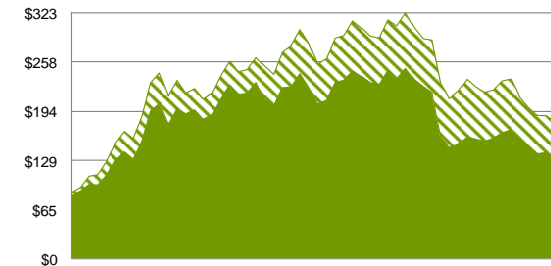
Spain (\$M)



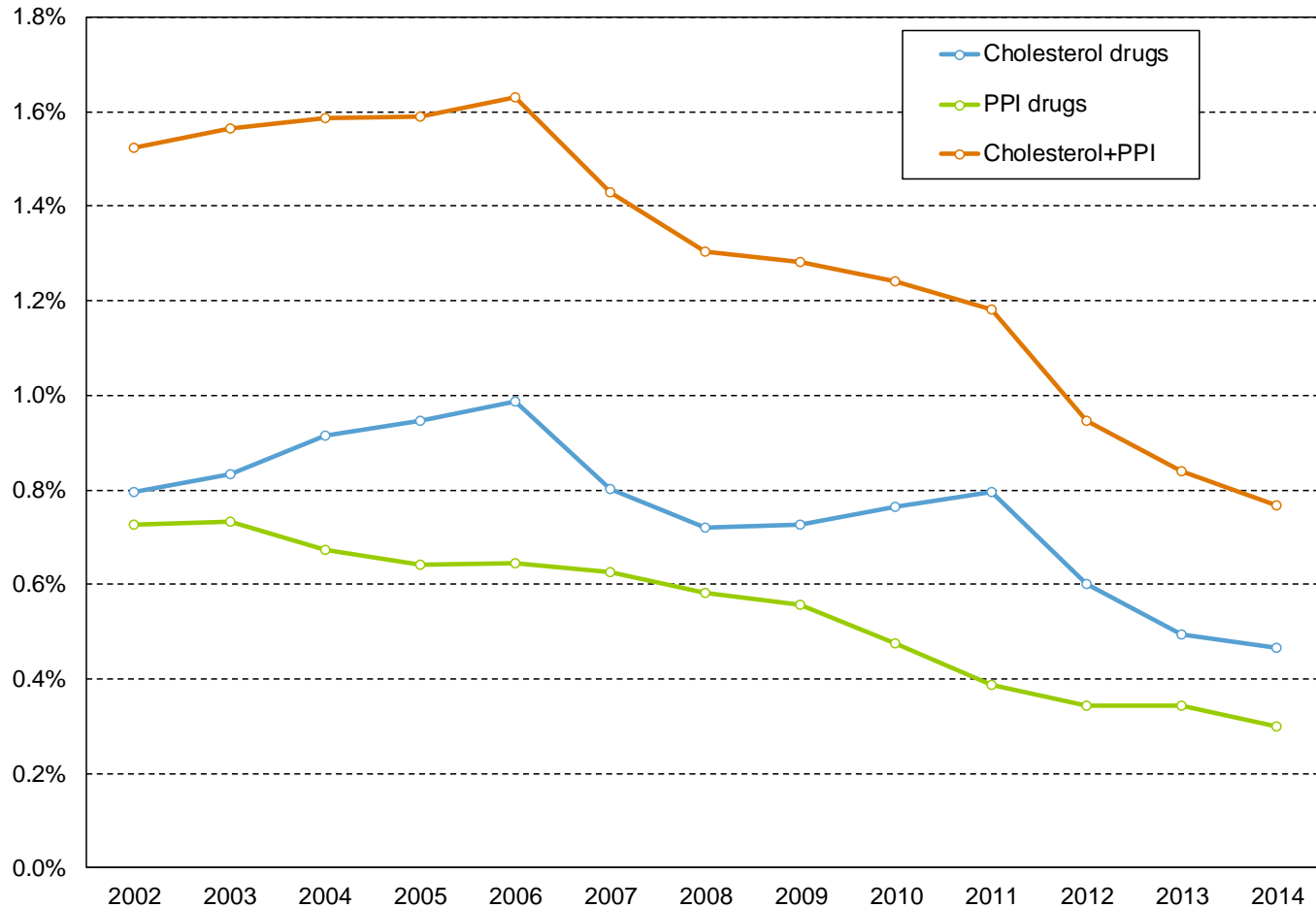
UK (\$M)



Italy (\$M)



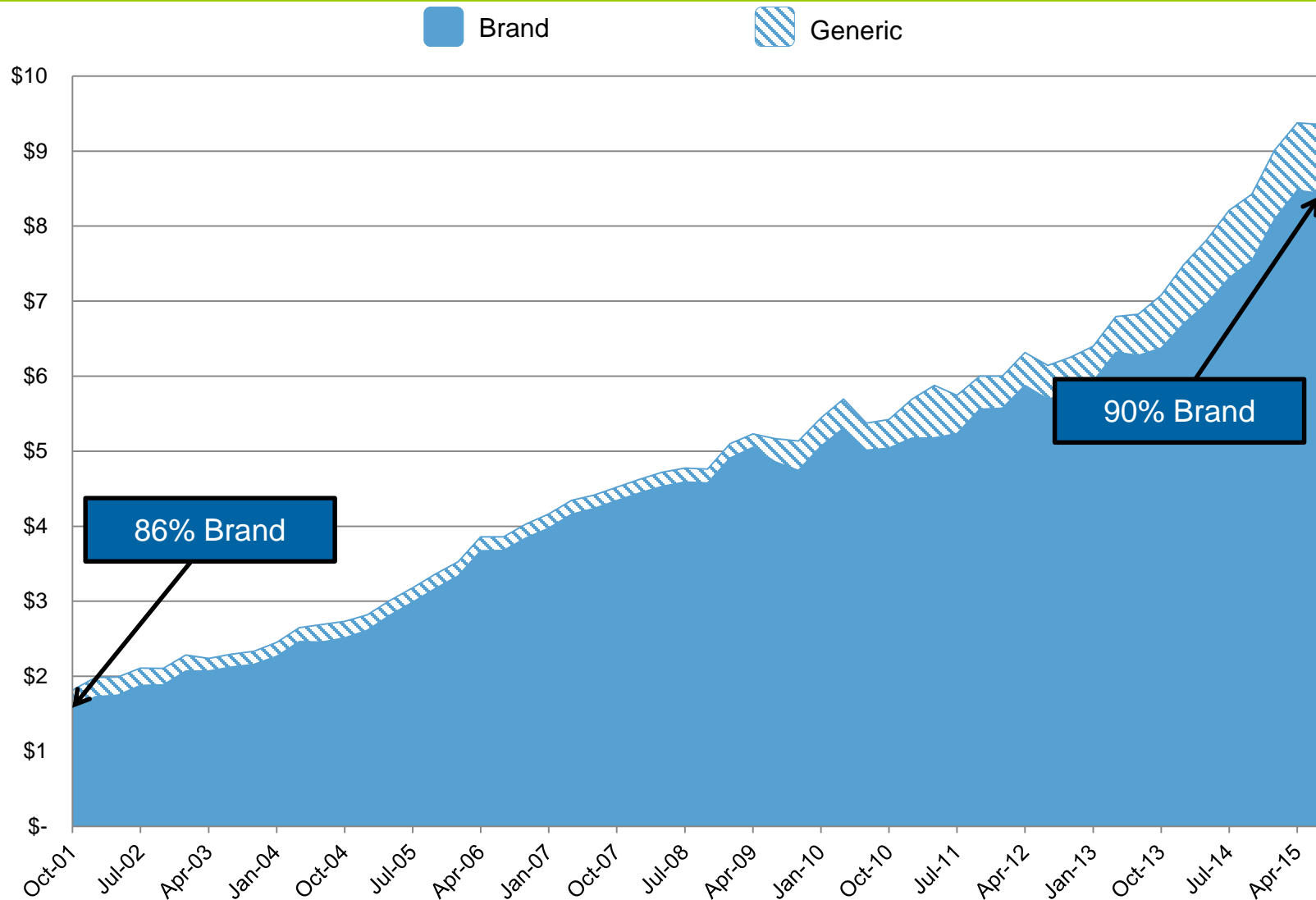
Spending on antiulcer and anticholesterol products as share of US National Health Expenditure



Spending by oncology category: 2001 - 2015

Cytotoxics, Hormonals, and Targeted therapies
in the US and six major markets

US spending on generic oncology medications is growing, but overall, branded spending is growing faster

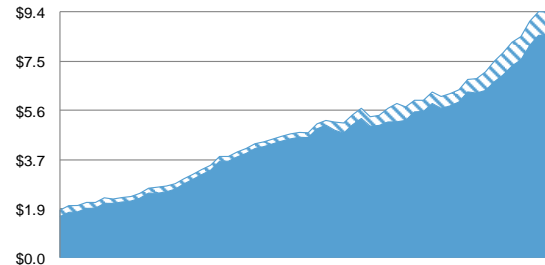


US brand/generic oncology spending patterns show some similarities and some differences with other major markets (quarterly spend)

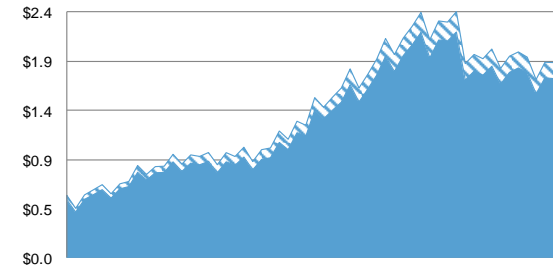
- Oncology medications as defined by IMS Health includes direct treatments only, does not include supportive care
- Quarterly spend measured at manufacturer level (excluding off-invoice rebates/discounts)
- Data runs from 4Q 2001 to 3Q 2015



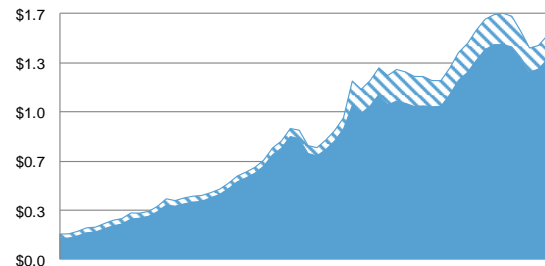
USA (\$B)



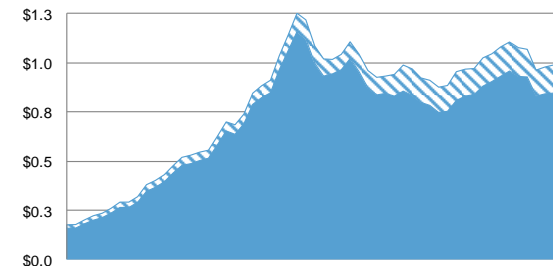
Japan (\$B)



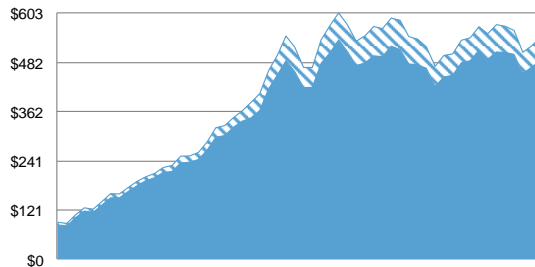
Germany (\$B)



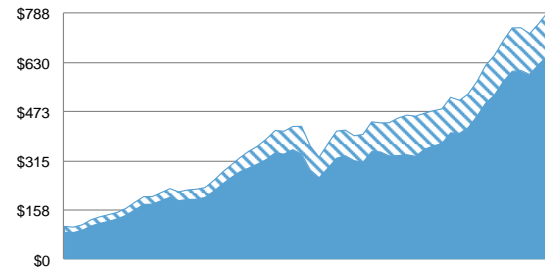
France (\$B)



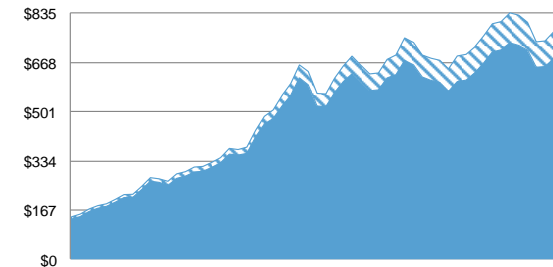
Spain (\$M)



UK (\$M)

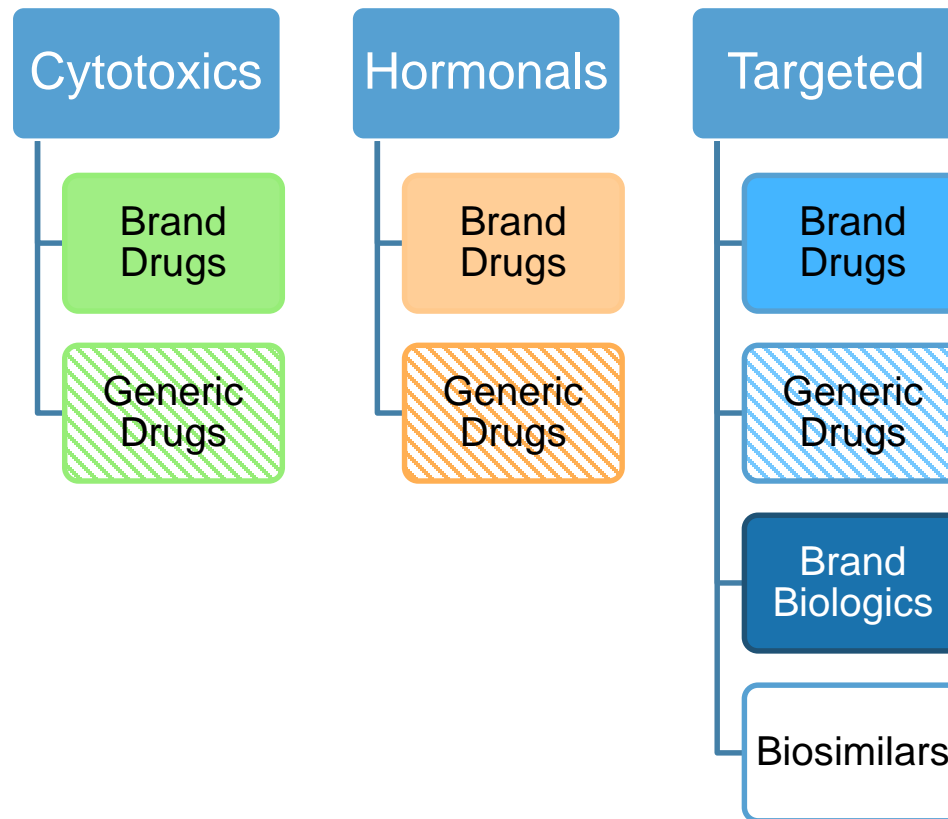


Italy (\$M)

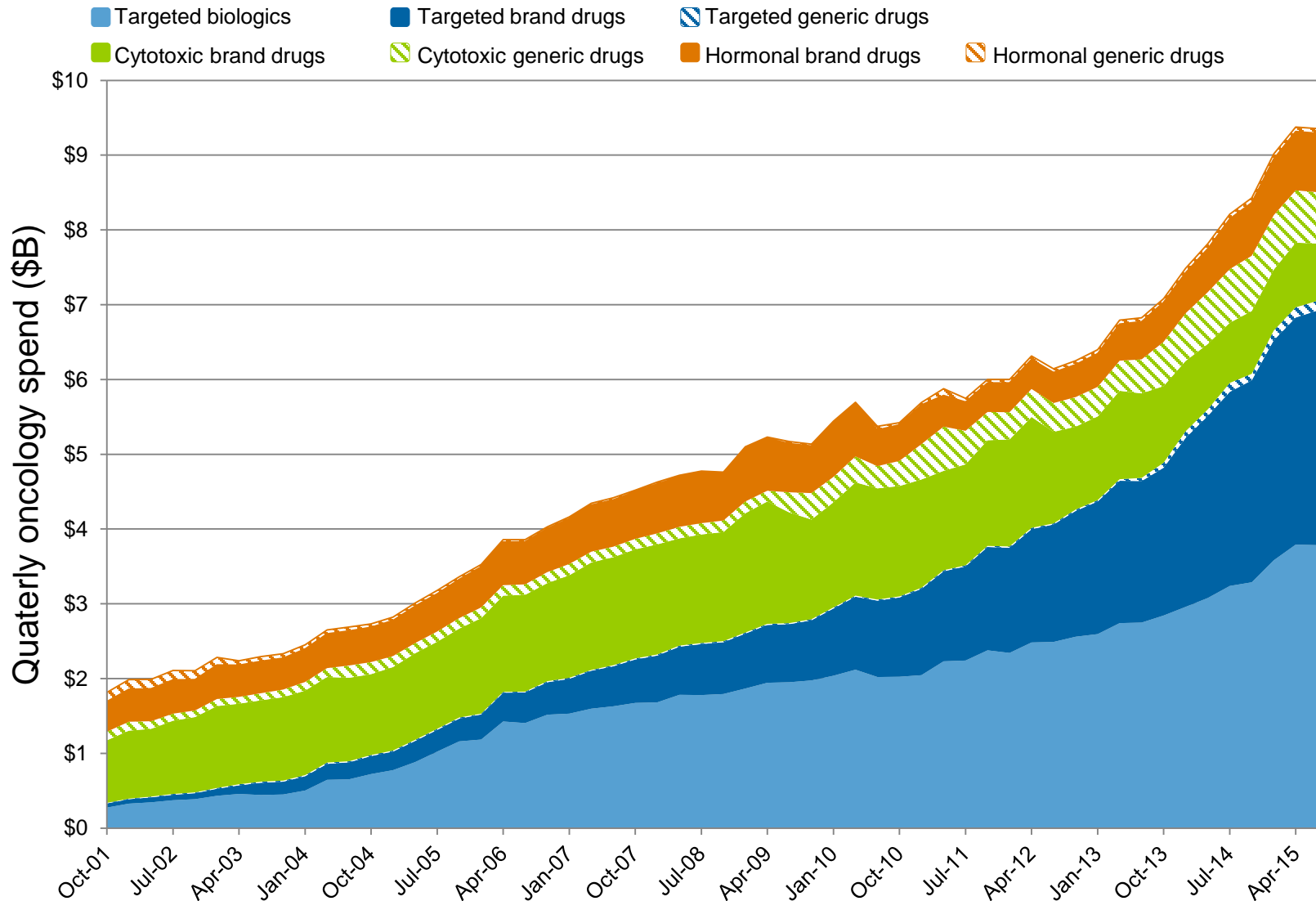


Three broad classes of oncologic medications are defined by IMS Health: Cytotoxics (chemotherapy), Hormonals and Targeted therapies

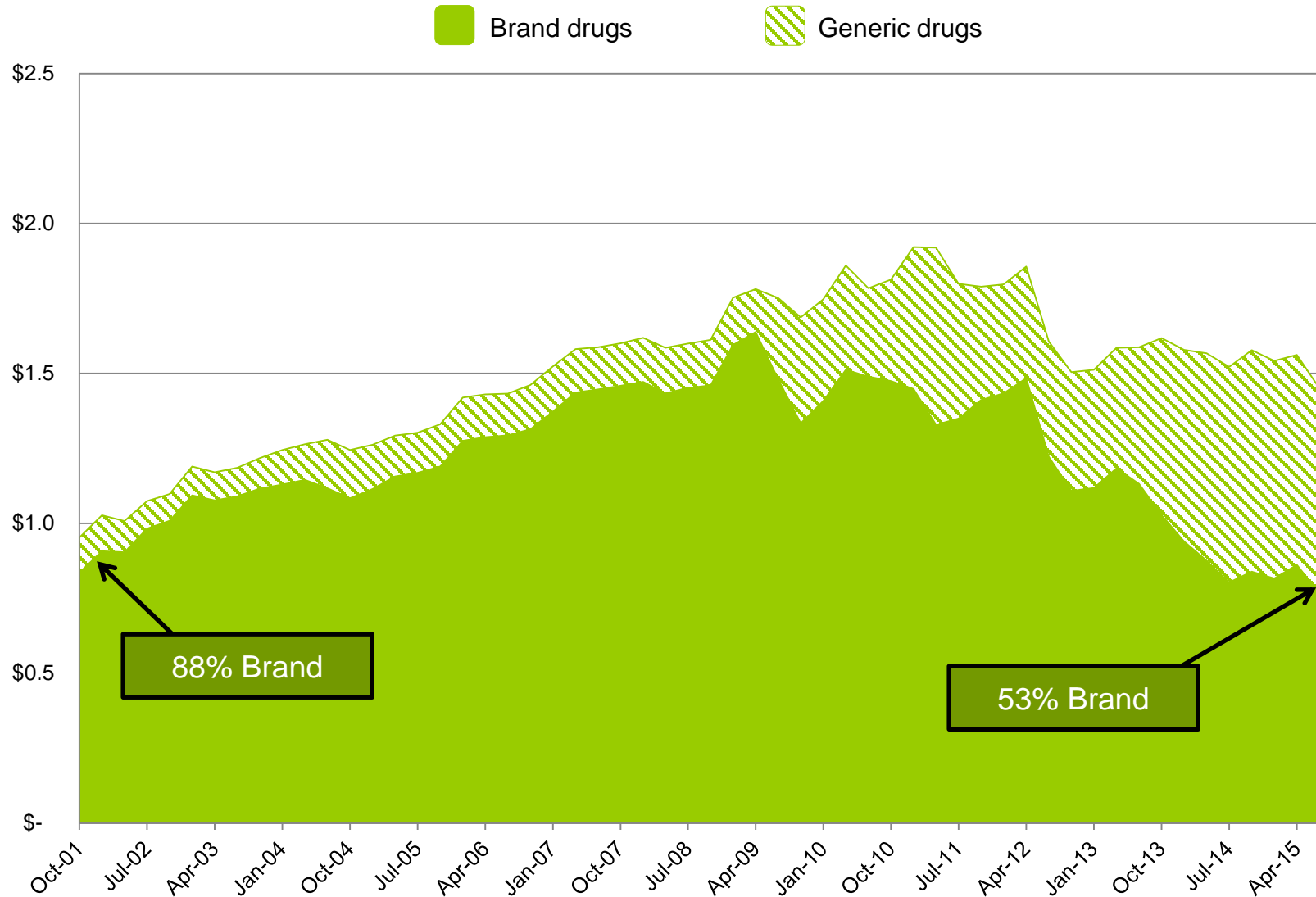
- All three classes include brand and generic drugs
- IMS provides data on generic competitors and LOE dates as available
- Biologics launched to date are all in the targeted therapy class
 - These will ultimately lead to biosimilars



The growth in oncology medication spending in the US is largely due to growth in spending on Targeted therapies (quarterly spend)





In the US, total spending on Cytotoxics has begun to fall as generics take a large share of the market (quarterly spend)

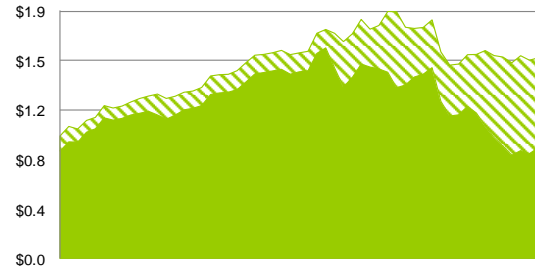


Spending on Cytotoxics has also peaked in most other major markets, but generics take a much larger share of total sales abroad (quarterly spend)

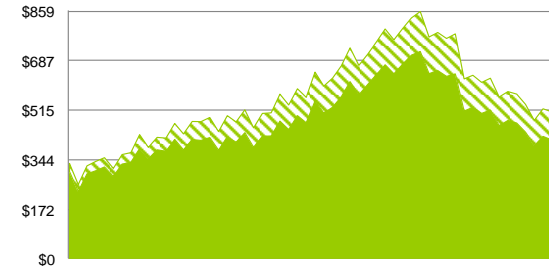
- Oncology medications as defined by IMS Health includes direct treatments only, does not include supportive care
- Quarterly spend measured at manufacturer level (excluding off-invoice rebates/discounts)
- Data runs from 4Q 2001 to 3Q 2015

 Generic drugs
 Brand drugs

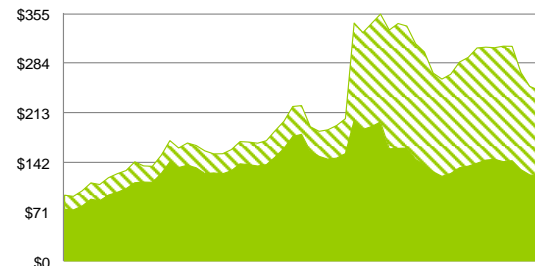
USA (\$B)



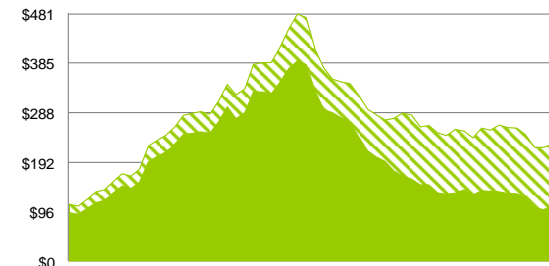
Japan (\$M)



Germany (\$M)



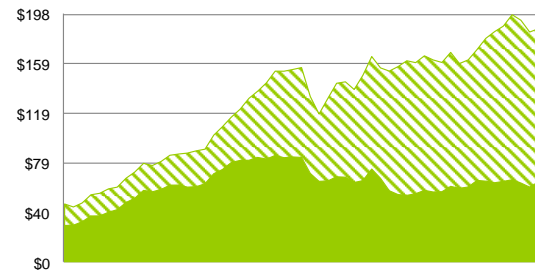
France (\$M)



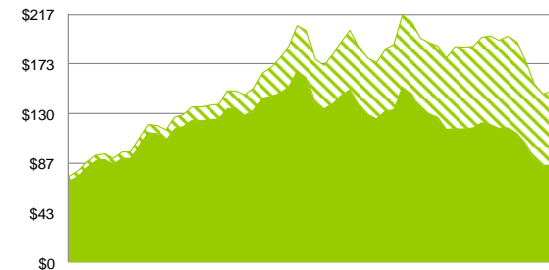
Spain (\$M)



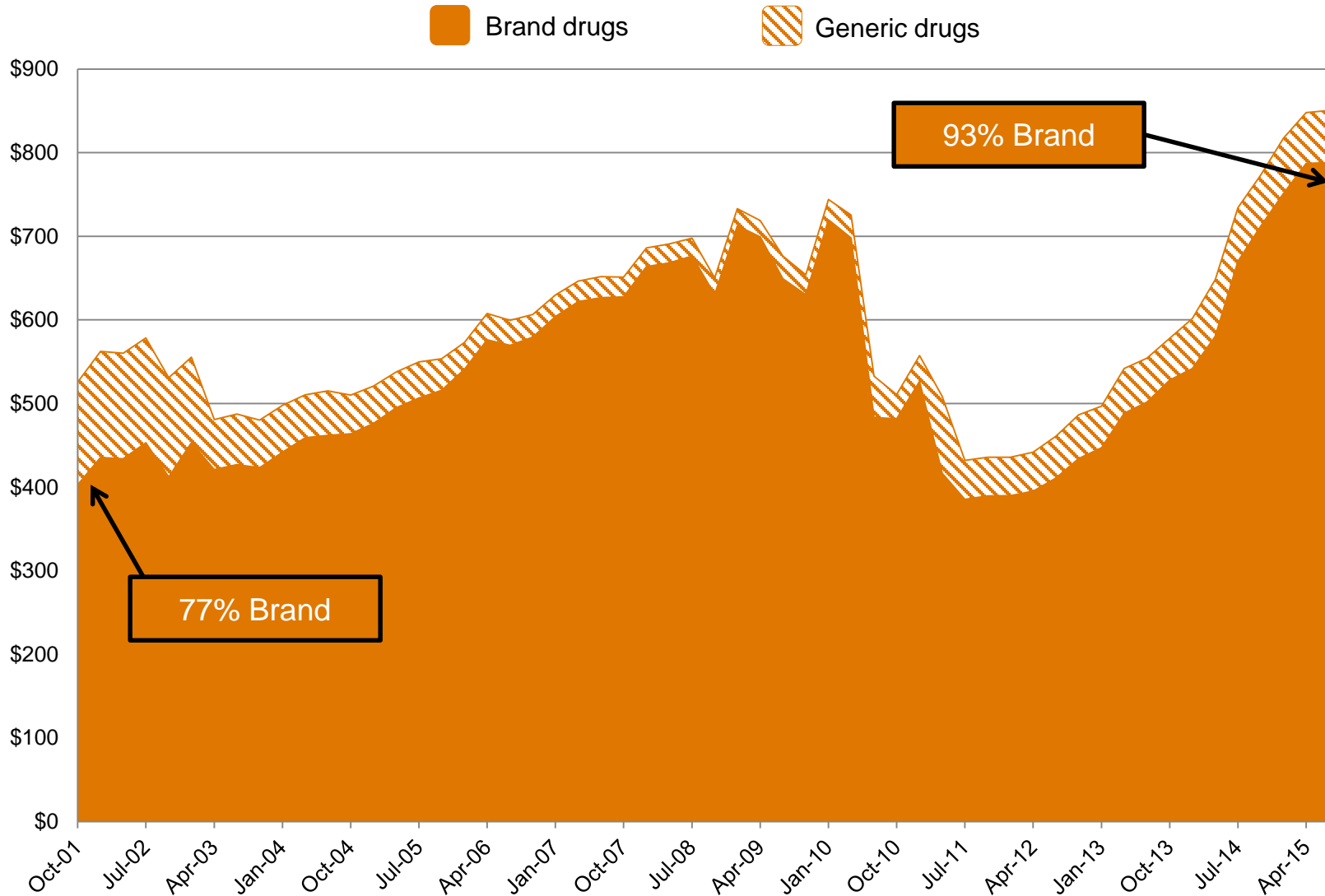
UK (\$M)



Italy (\$M)





Hormonals comprise a smaller share of the total class in the US, but sales have resumed an upward trend following a peak (quarterly spend)

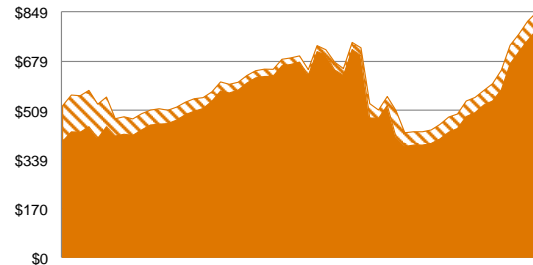


Spending on Hormonals has also peaked in other major markets, and has resumed climbing in most, but not all markets

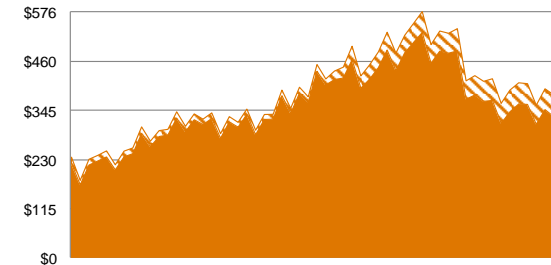
- Oncology medications as defined by IMS Health includes direct treatments only, does not include supportive care
- Quarterly spend measured at manufacturer level (excluding off-invoice rebates/discounts)
- Data runs from 4Q 2001 to 3Q 2015

 Generic drugs
 Brand drugs

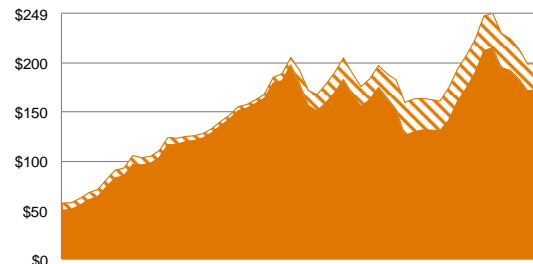
USA (\$M)



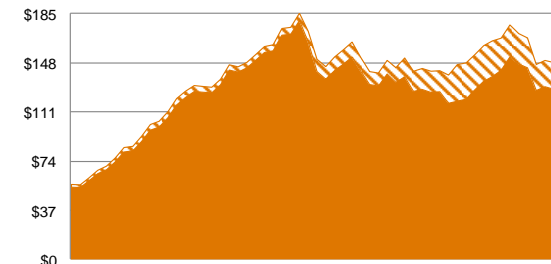
Japan (\$M)



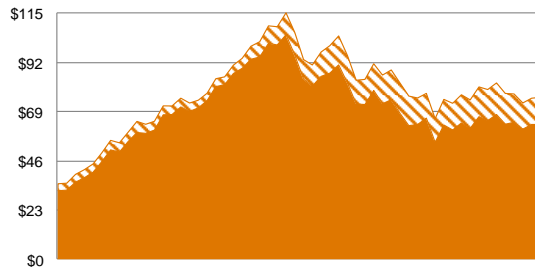
Germany (\$M)



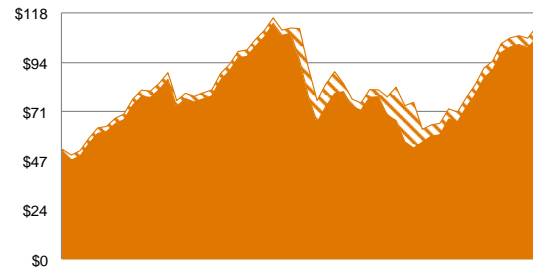
France (\$M)



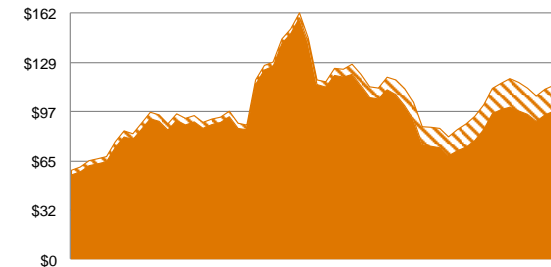
Spain (\$M)



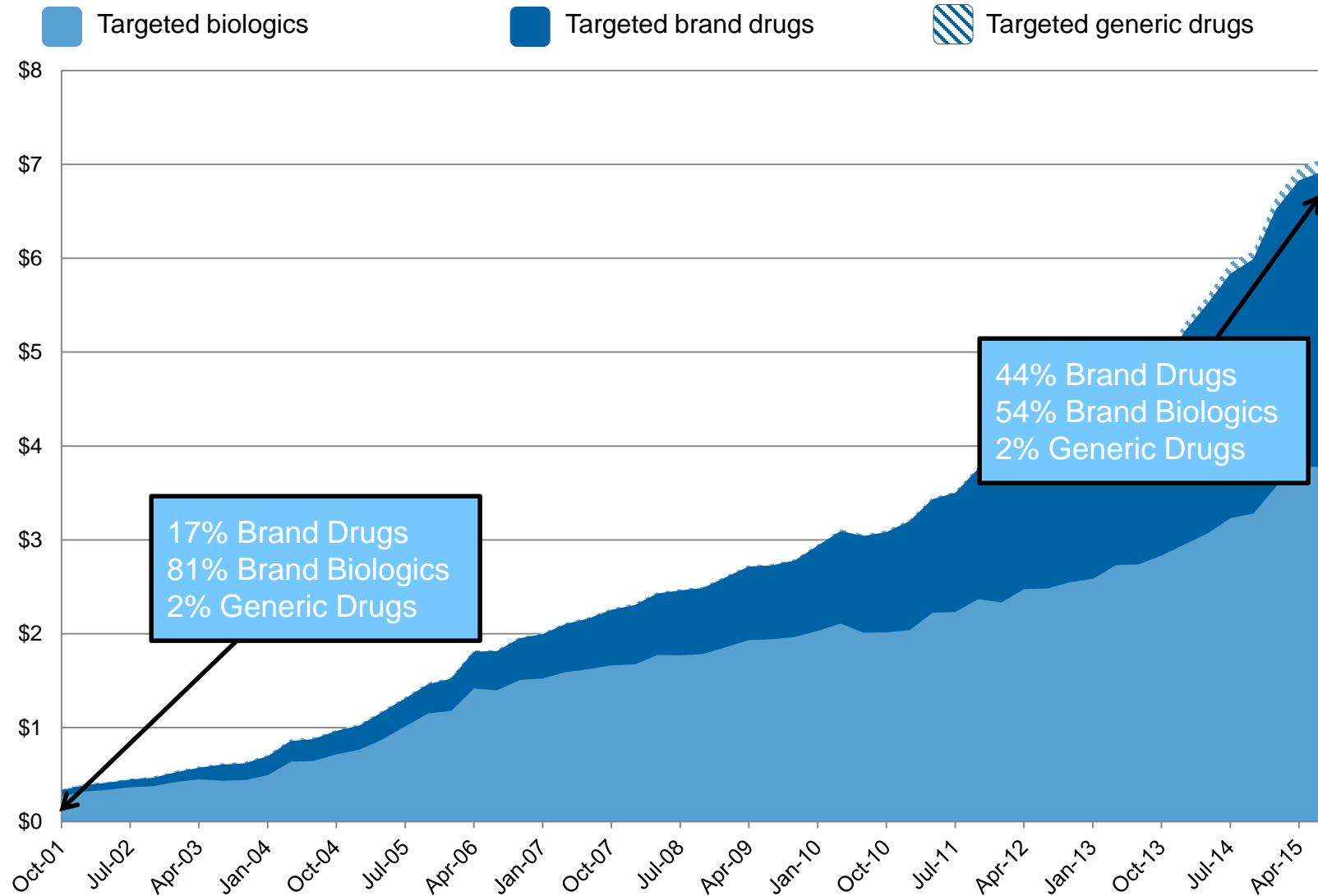
UK (\$M)



Italy (\$M)

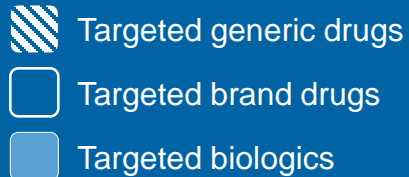


Targeted therapies are the largest segment in the US and continue to show growth, driven by both branded drugs and biologics; generics are almost nonexistent (quarterly spend)

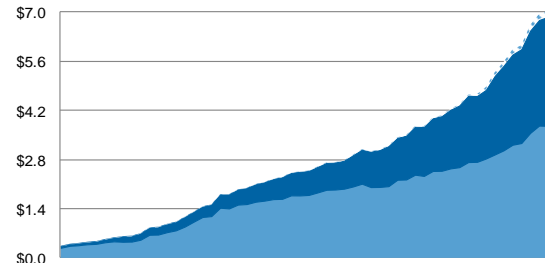


Spending on Targeted therapies in other markets generally continues to grow, with large share being biologics; generics are a minor presence (quarterly spend)

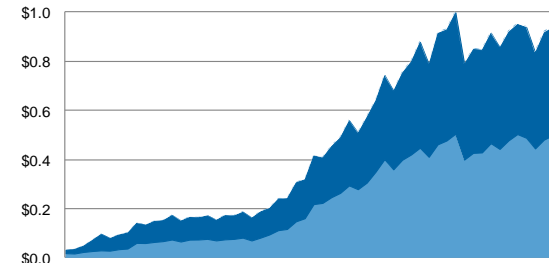
- Oncology medications as defined by IMS Health includes direct treatments only, does not include supportive care
- Quarterly spend measured at manufacturer level (excluding off-invoice rebates/discounts)
- Data runs from 4Q 2001 to 3Q 2015



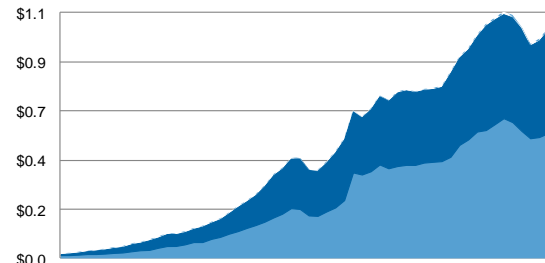
USA (\$B)



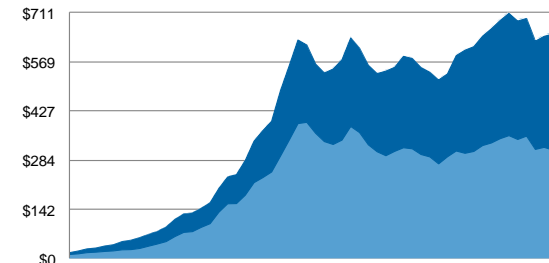
Japan (\$B)



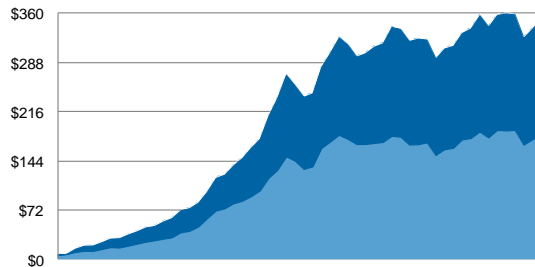
Germany (\$B)



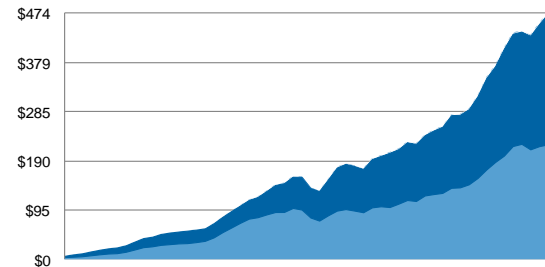
France (\$M)



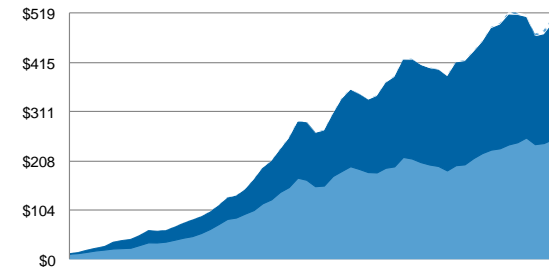
Spain (\$M)



UK (\$M)



Italy (\$M)

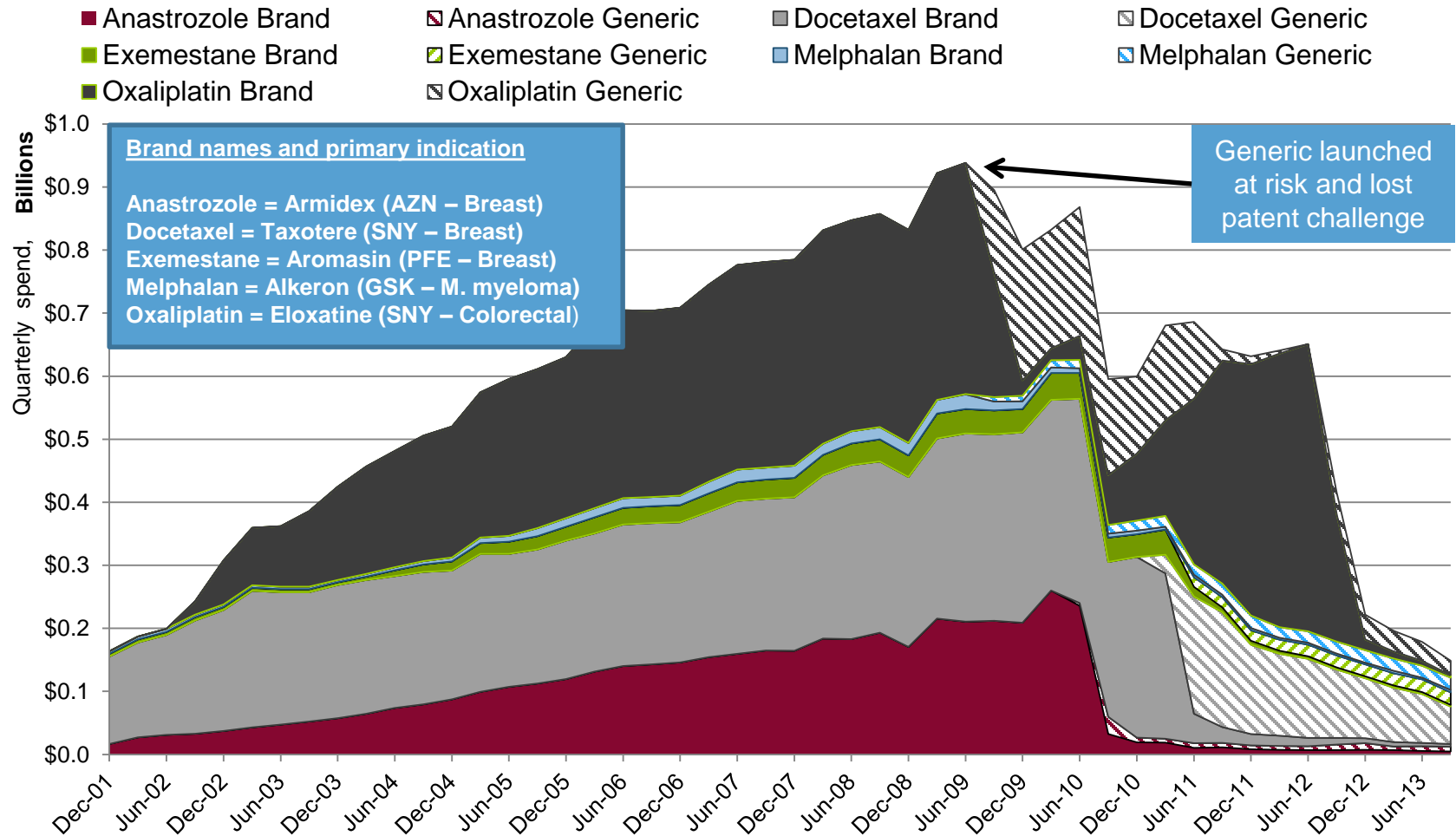


Oncology medicine patent expirations in the US

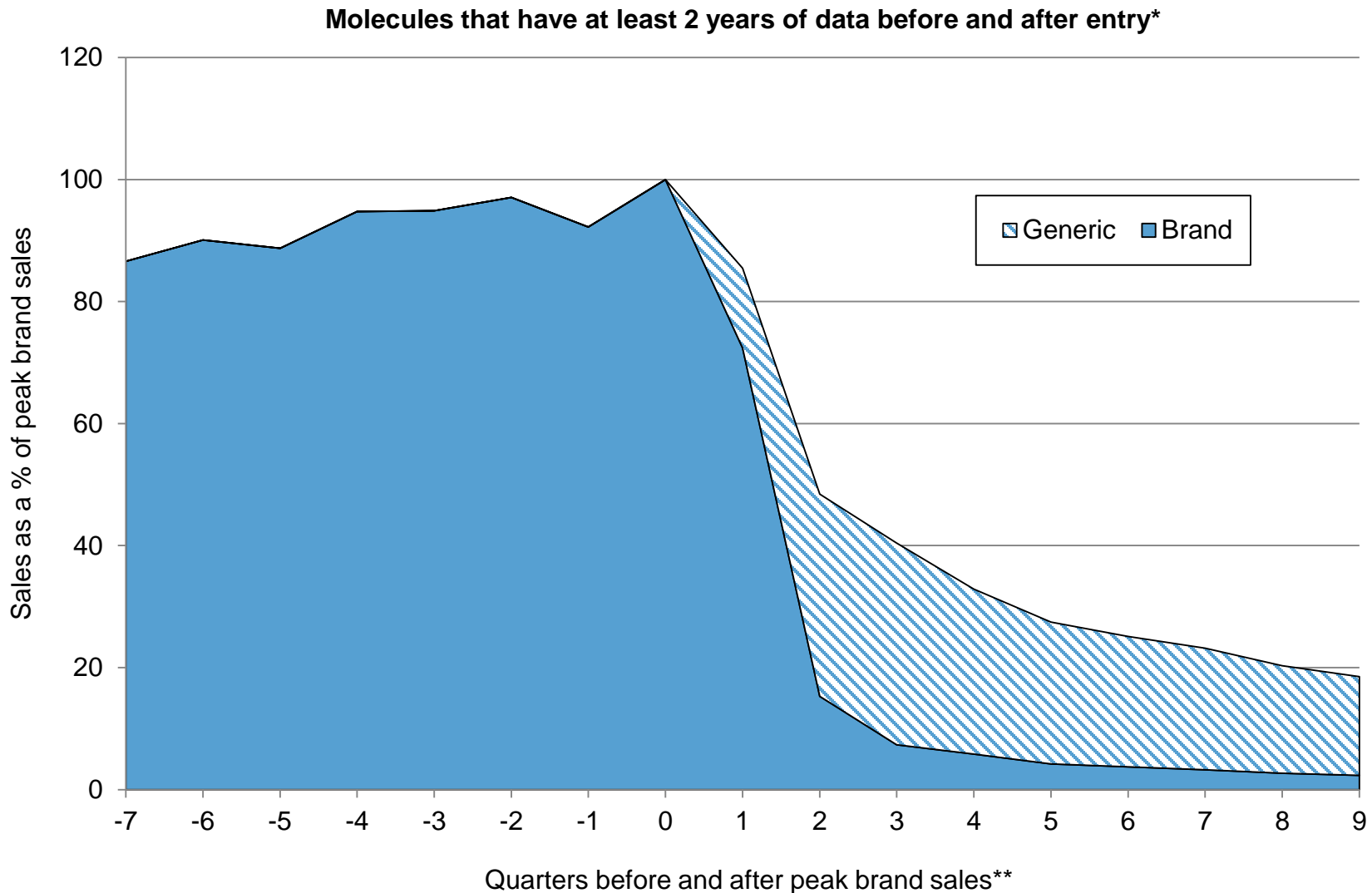
Historical experience and future projections

What happens when cancer drug patents expire?

Five recent examples (quarterly spend)



When patents expire, sales of branded oncology medications fall quickly and deeply just as they tend to do in other classes

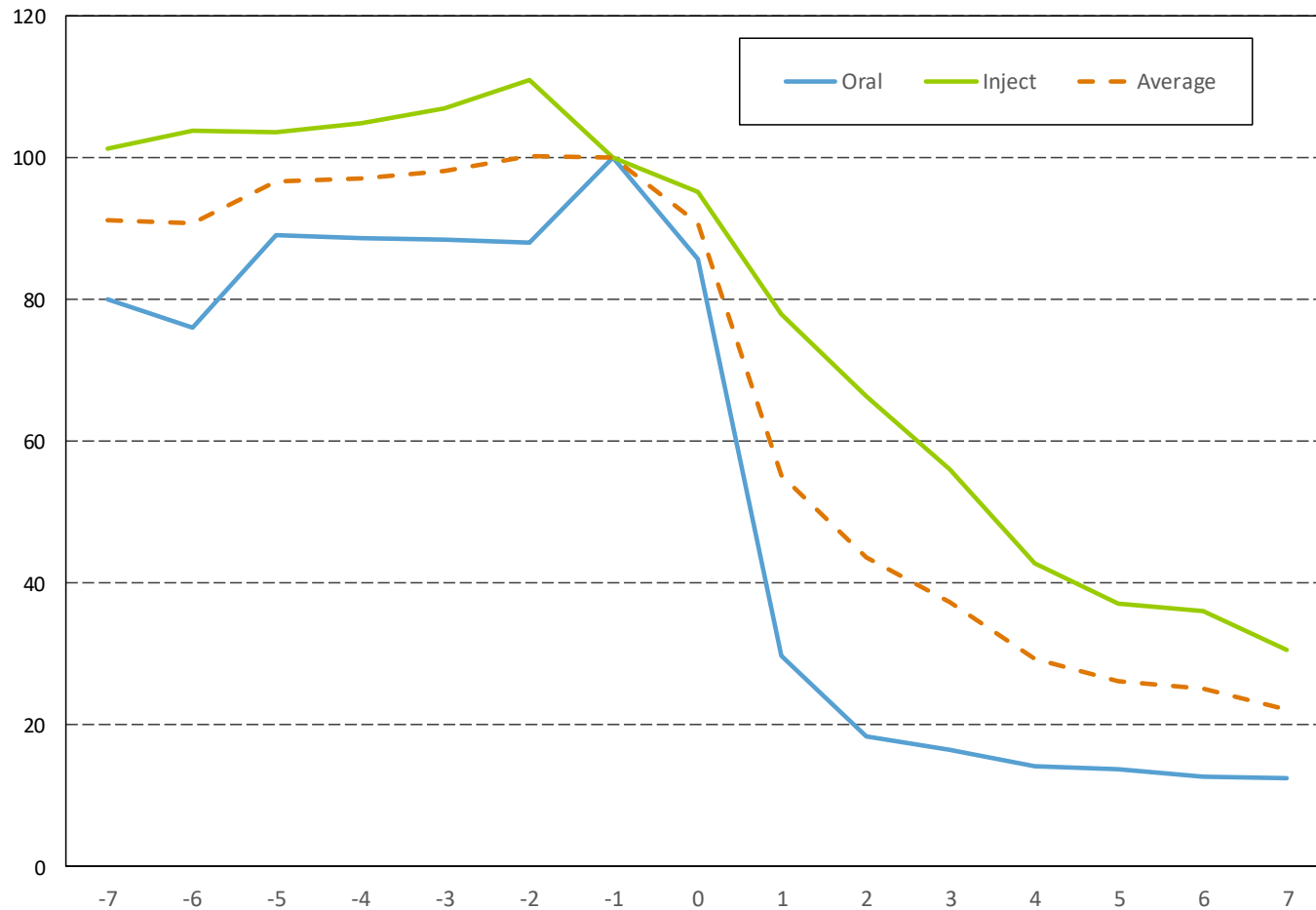


* Excludes products that experienced at-risk launch of generic product that was later withdrawn from market

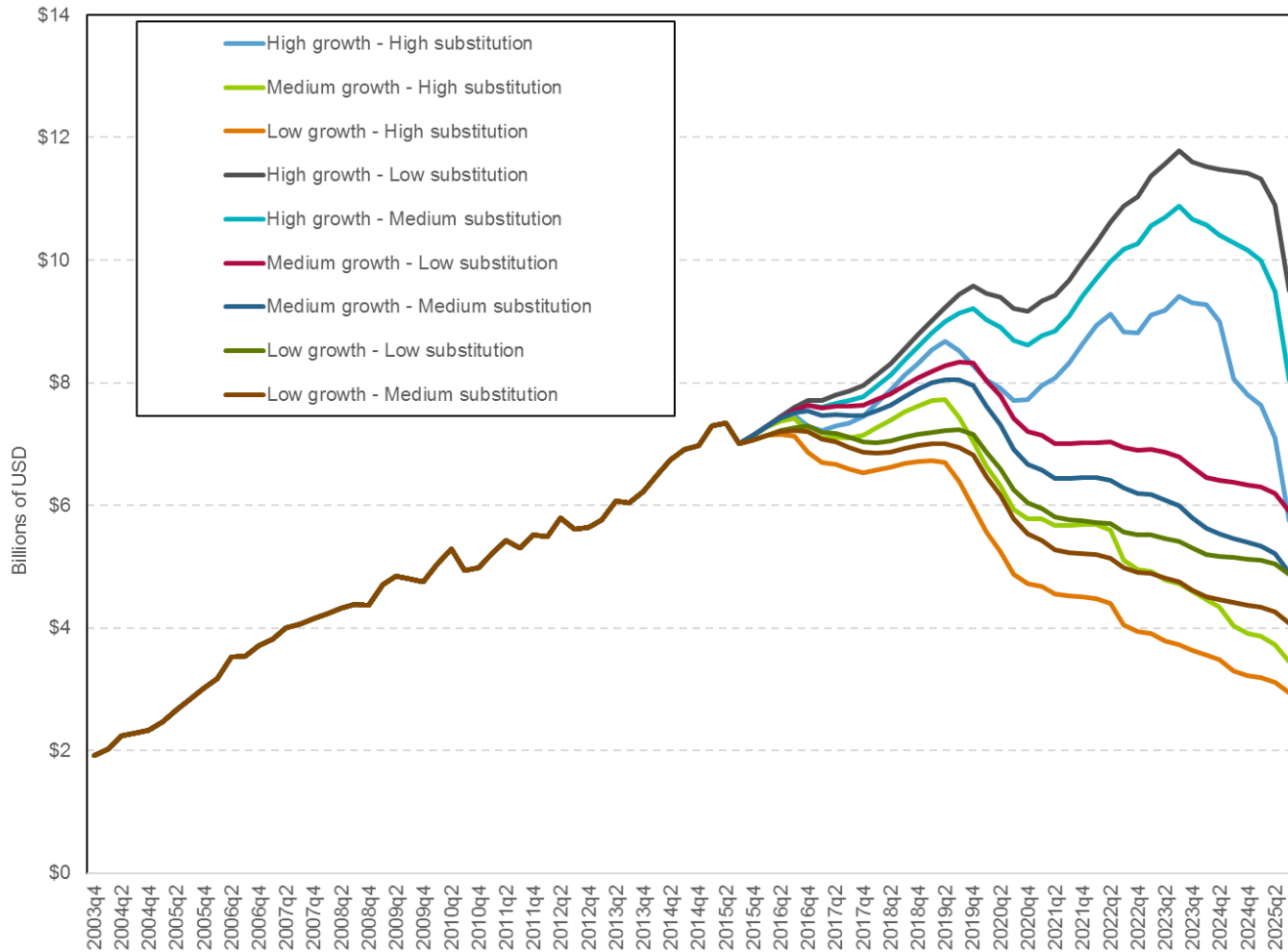
** Peak brand sales occur the quarter prior to loss of exclusivity

What can we say about future spending?

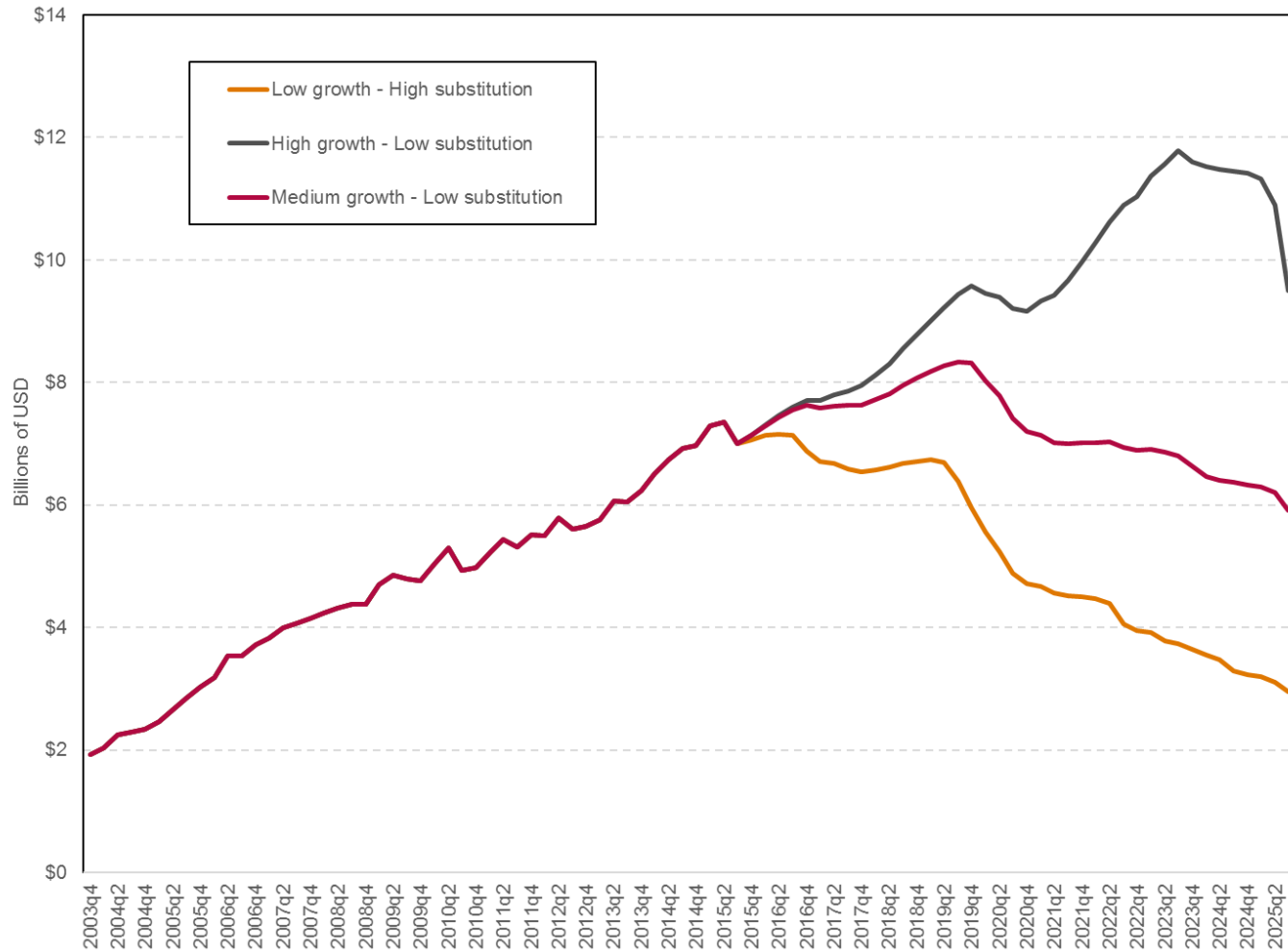
Revenue profile before and after LOE based on “well behaved” sample



Nine Scenarios for future spending (90% sample)



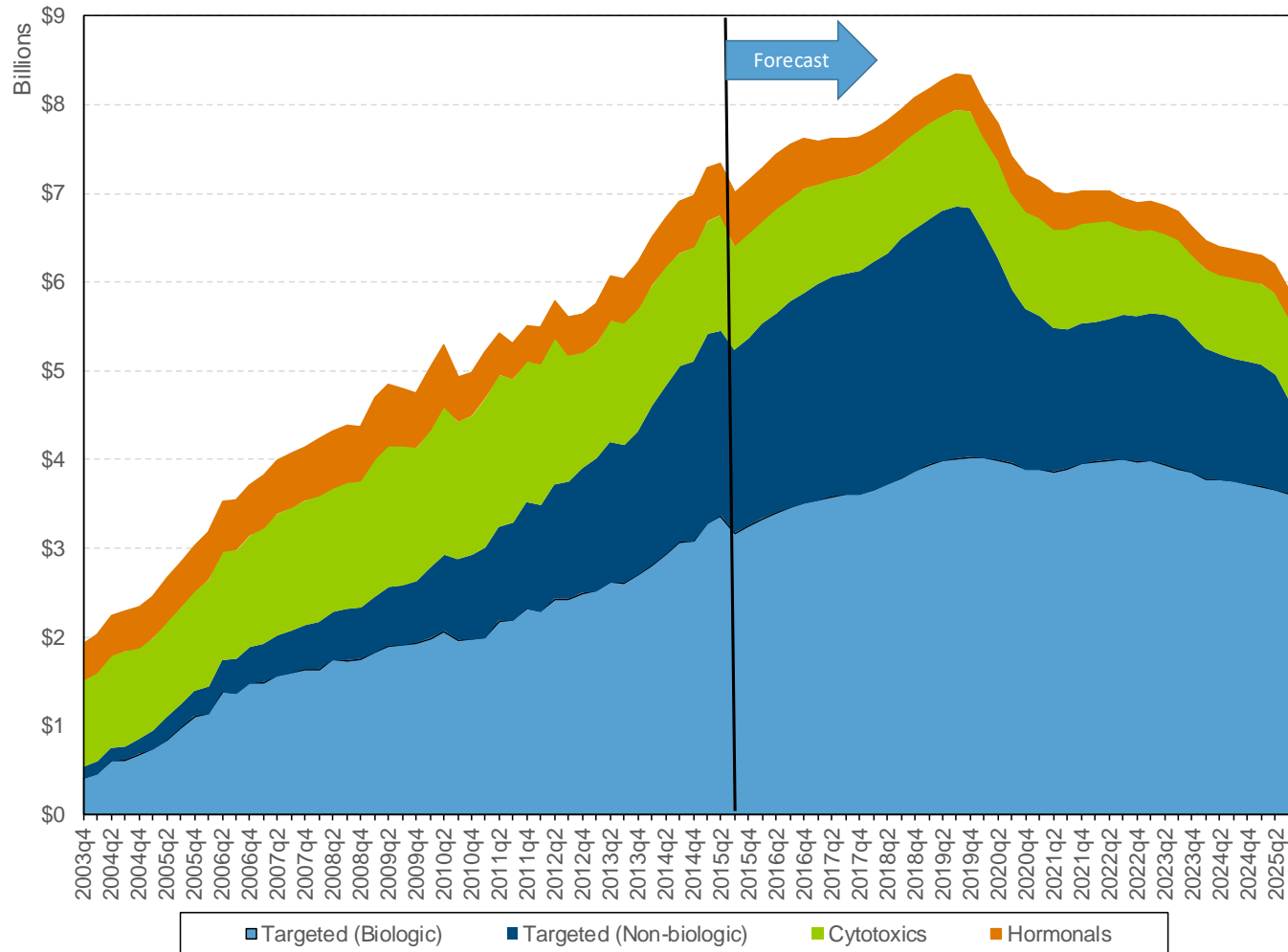
Actual and projected oncology product spending on 90% sample of existing products



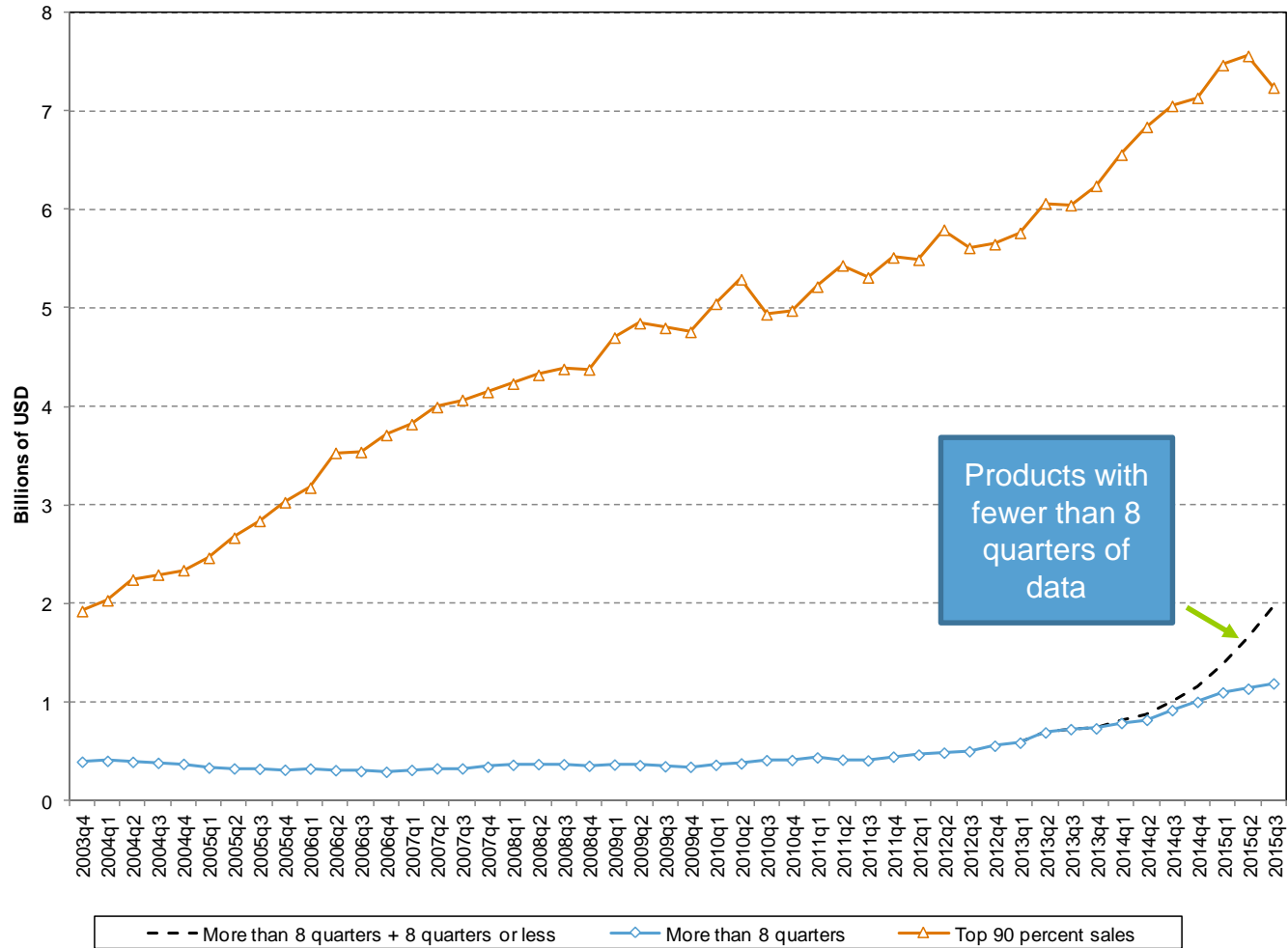
Projected spending on 90% sample of oncology products as a share of US National Health Expenditure (projected), 2015-2025



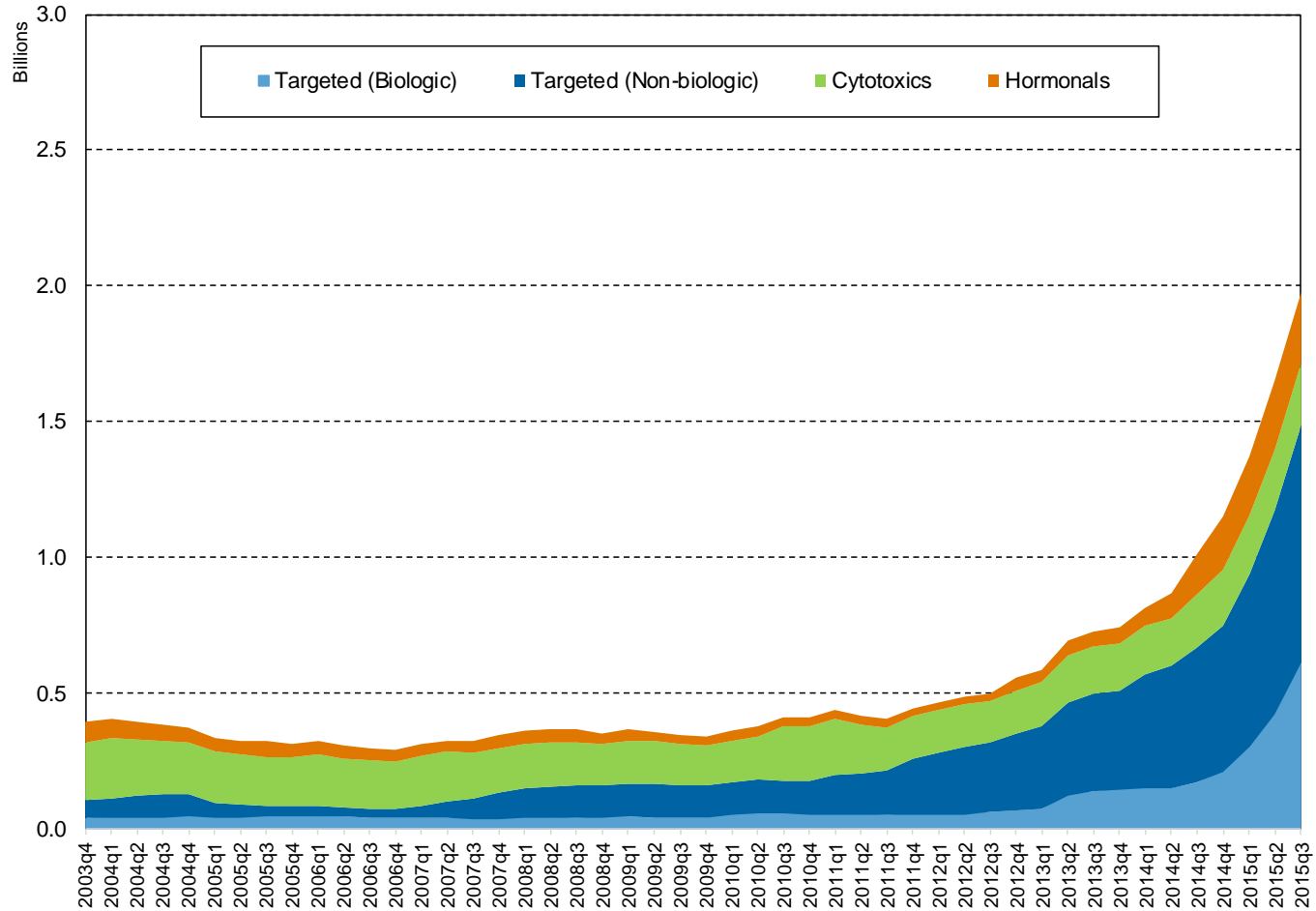
Composition of projected spending by therapy type for 90% sample (Medium Growth, Low Substitution Scenario)



Spending trend for 90% and 10% samples



Composition of drug type in 10% sample



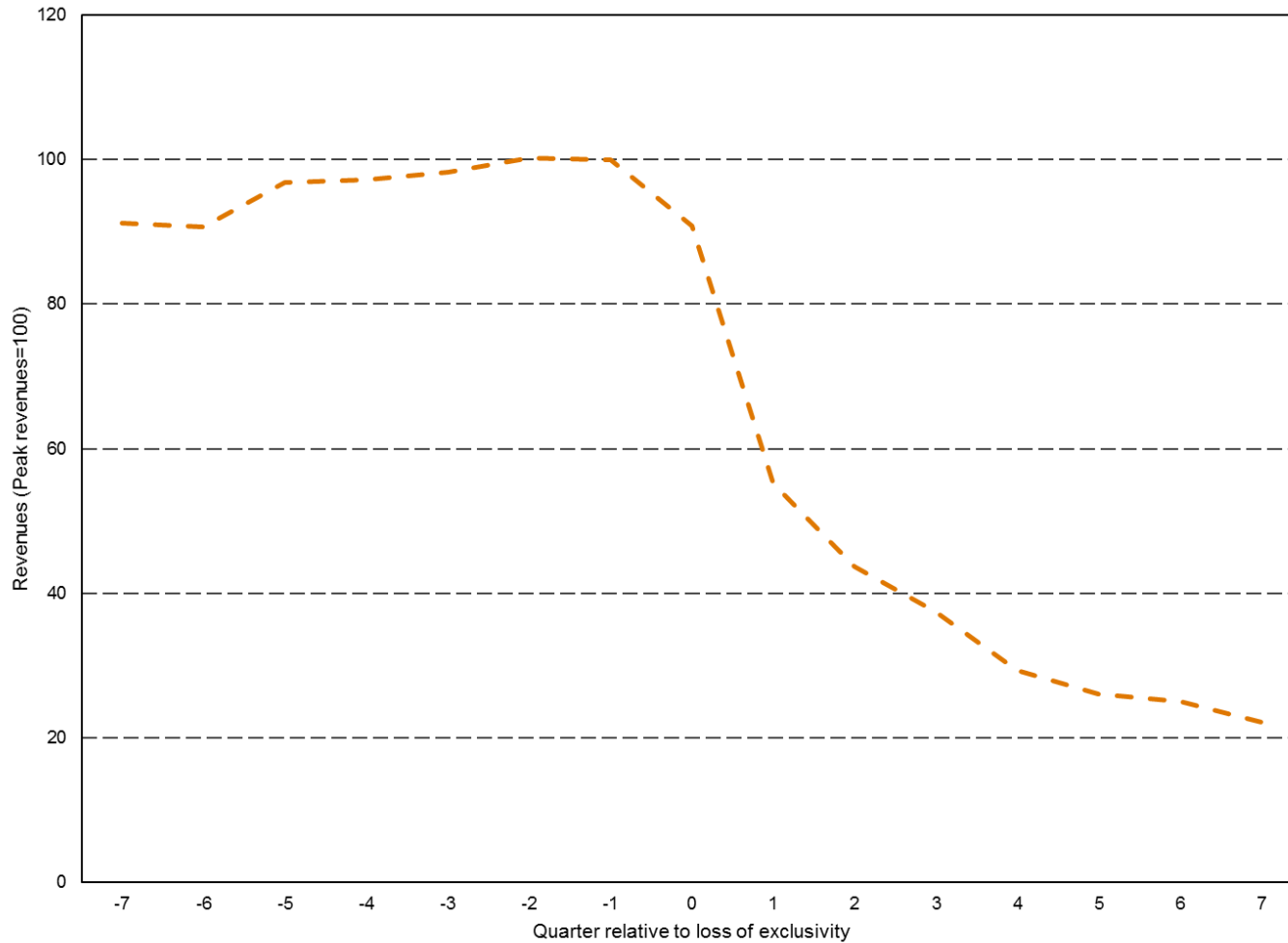
Conclusions

Is spending on oncology medications unsustainable?

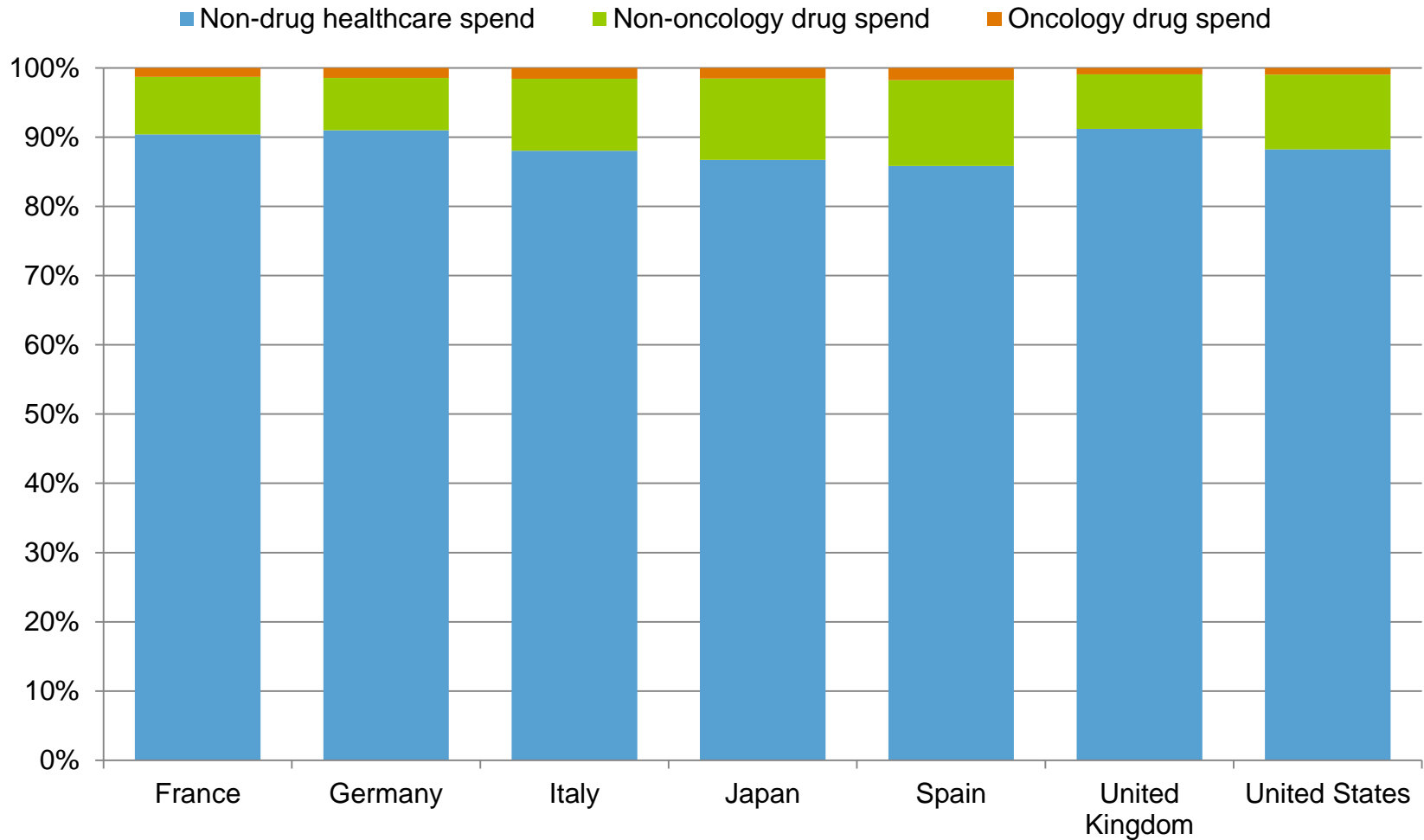
- Based on a high level review in the US and 6 major markets, spending on oncology medications does **not** appear unsustainable from a health system perspective
 - Patterns of spending are in many ways similar to those of other classes of medications
 - The size of the class is not out of line with other product classes (e.g. cholesterol lowering agents) that have peaked and have experienced dramatic reductions
- A key issue is that cancer is a complex set of diseases, not a single disease with a single treatment
 - **Medicine remains in the early stages of treating many cancers**
 - **Many fear the spending impact of recent and future innovations**
 - A large share of innovative medicines are biologics
 - ◆ When will biosimilars truly start to make inroads into the US and other major international markets?
 - ◆ How large will their impact on total spending be?

Back-up Slides

Revenue profile before and after LOE based on “well behaved” sample

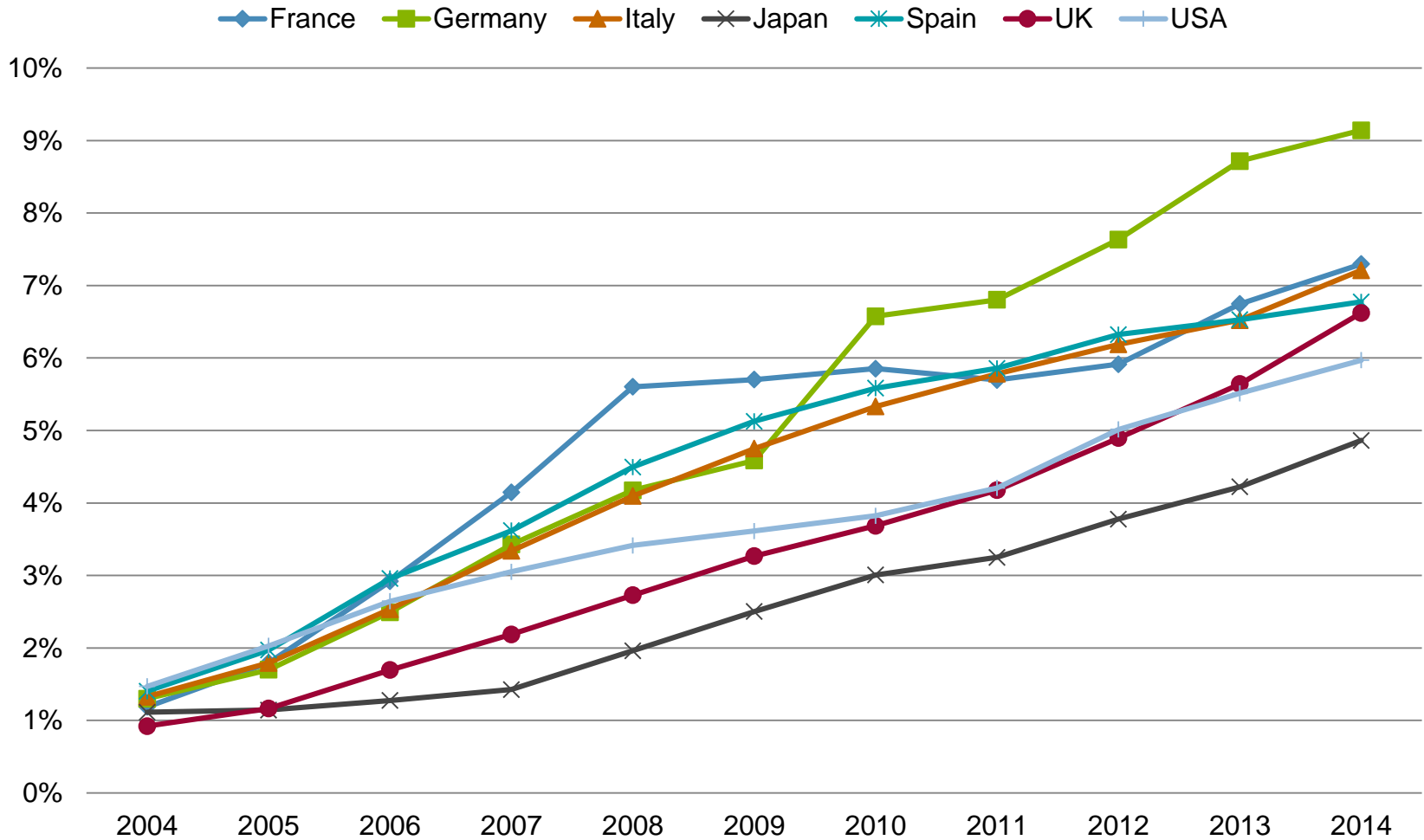


Spending in oncology is a substantially small proportion of total health care spend across all markets



Source: IMS Health; World Bank

Targeted biologics as a share of total Rx spending across major market countries



Source: IMS Health

The spending share of Targeted Brand Biologics has remained constant over the past 9 years

