

RECESSION

How Will the Next Great Recession Affect the US Pharma Industry?

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There will always be a business cycle, and white-collar workers will get hit in the next recession like they always do in recessions.

> **Robert Reich** American economist, served in the administrations of Presidents Gerald Ford, Jimmy Carter, and Bill Clinton as Secretary of Labor from 1993-1997

The global financial crisis - missed by most analysts - shows that most forecasters are poor at pricing in economic/financial risks, let alone geopolitical ones.

> *Nouriel Roubini* American economist

1. Is Another 'Great Recession' Coming?

1.1 Another Recession Is Coming Soon

The US will have another recession as certain as night follows day as the opening quote clearly suggests. Also, the business cycle has not been outlawed nor made extinct, contrary to the overly optimistic views of macroeconomists who think they have mastered the science and art of countercyclical monetary and fiscal policies. The macroeconomic environment for pharma companies is an exogenous factor beyond the capability of any individual firm (or for that matter the entire industry) to affect. Thus, before discussing what pharma companies can do in preparing for the effects from a severe recession, what is the likelihood of a recession happening and how severe will it be?

The 'Great Recession' lasted from December 2007 through June 2009 as determined by the Business Cycle Dating Committee of the National Bureau of Economic Research (NBER). By all accounts, the Great Recession adversely affected both US and global pharma and healthcare markets.¹⁻⁷ This event was also considered a transformative and structurally-changing event for the US pharma industry. The pharma industry is considered more recession sensitive after this event than before. Greater recession sensitivity of drug demand can be attributed to multiple factors, including the pharma industry shift to expensive targeted personalized specialty medicines, often involving orphan drugs to treat rare diseases, and greater cost-shifting by payers to the patient.⁸⁻¹¹

There are multiple signs that despite 2018 ending on some good macroeconomic news, such as, record low unemployment across all population segments, a higher labor force participation rate (though still very low by historical standards), and growing real wages, structural problems still persist from the Great Recession.¹² Fears about the next recession started in the summer of 2018¹³ and really began to manifest itself with significant stock market volatility in December 2018, ¹⁴⁻¹⁵ with continued risks being called out in late 2018, early 2019, and to this current day. The Federal Reserve (also referred to as "the Fed") reduced the federal



funds rate, a benchmark used for rates on credit cards and mortgages, by a quarter point to a range between 2% and 2.25% at the end of July 2019, seen by economists and market analysts as an expansionary move, in response to a growing fear about domestic and global economic and geopolitical conditions.¹⁶⁻¹⁷ This action by the Fed mirrors sentiments recently expressed by the Federal Reserve Federal Open Market Committee (FOMC) meeting of June 18-19, 2019 noting that risks to the future economic outlook are balanced, meaning there are both positive and negative signs to continued economic growth.¹⁸ Participants expressed gloom about the global economic future at the latest annual Federal Reserve Economic Policy Symposium in August 2019 held in Jackson Hole, Wyoming.¹⁹

There is good reason to believe that the next recession may be just as severe as the Great Recession according to these observations:

- Global as well as US consumer debt are at record levels.²⁰⁻²¹This means governments and consumers/ patients will be in more leveraged positions when a recession occurs and thus unable to sustain spending, including on pharmaceuticals and healthcare.
- 2. US federal government annual budget deficits will reach the \$1 trillion level in budget year 2020. Total receipts and outlays were recently reported for the first nine months of the fiscal year 2019. While total receipts have increased this year by about 3%,²² total outlays are

trending at a 7% increase.²² Increases in entitlement spending, especially Social Security and Medicare, will continue to rise as the baby-boomers enter these programs. These structural deficits are unsustainable and place upward pressures on the real cost of capital (interest rate), thus further increasing the cost of financing these deficits. Worse, both political parties seem unwilling to make hard choices about tackling our deficit problem viewed as mainly a spending issue as noted by the final report from President Obama's bipartisan National Commission on Fiscal Responsibility and Reform (also known as Bowles-Simpson).²³ The recent budget agreement for 2020 and 2021 not only demonstrates an unwillingness by political leaders to address the problem of long-term structural deficits but also unfortunately adds to them.²⁴

3. The global economy is showing signs of weakness, such as the following trends: (a) significantly lower GDP growth in China (in large part caused by current trade conflicts with the US), (b) slower growth in Europe (including risks about a no-deal Brexit), (c) numerous geopolitical hotspots around the world that are creating an environment of uncertainty, and (d) high leverage risks in emerging markets, which taken all together are raising concerns that the foundations for the next Great Recession are coming together.²⁵⁻²⁸

The preceding economic and geopolitical signals are reasons why economists surveyed earlier this year by *The Wall Street Journal (WSJ)* assessed a 25% and 57% chance for a recession respectively in 2019 and 2020.²⁹ However, Fed Chairman Powell, speaking at a conference in Zurich on September 6, 2019, downplayed the occurrence of a US and global recession, though acknowledged some uncertainties and trade conflicts.³⁰ Markets nervously reacted to the August 2019 US jobs report, noting that the numbers reflected a global slowdown occurring outside the US, stunting growth, but not pushing the US into recession.³¹ The editorial page of the *WSJ* noted the drag on economic growth cause by trade uncertainty created by the Trump administration.³² Finally, the Federal Reserve announced a small quarter-point reduction in the discount rate to just above 2.0% on September 18, 2019, reflecting slowing economic growth in Europe and China, and the effects of global trade uncertainties that add to a drag on future growth prospects.³³

So, while the prospects of when a recession will start is uncertain, the next question to ask is '*how does a recession affect pharmaceutical drug demand?*'. This will be followed up by 'are pharma companies prepared for this event'? Or put another way, '*have any lessons from the Great Recession experience been incorporated into future pharma business planning when the next recession occurs?*'.

1.2 White Paper Objectives

The preceding backdrop clearly notes that another recession will occur, though uncertainty as to when, and the possibility of it being as severe as the Great Recession remain quite high. The questions posed in this white paper for pharma executives are as follows:

- 1. How does a severe recession affect drug demand in the current pharma environment?
- 2. What should pharma companies do to prepare for the next recession?
- 3. What analytics should be in place so that pharma companies can put together plans to mitigate the adverse effects of a severe recession on drug demand?

2. How Does a Recession Affect Drug Demand?

There is an overall dearth of empirical evidence connecting the sensitivity of biopharma industry demand for specific drugs to a recession. Publicly available research literature tends to look at the effects of a recession on drug spending in the aggregate. This aggregated analysis masks the specific and different types of recessionary effects on drug demand relative to factors that can be affected by company actions such as sales, marketing, payer contracting, and pricing. This comparison of effects is important since macroeconomic trends like a recession are taken as a given to an individual company, while sales and marketing are under management control. Thus, building models that measure how the advent and severity of a recession can be mitigated by management control variables is important insight to know for executives. Moreover, we know the Great Recession had different effects by geography, especially by specific region or metropolitan area. Therefore, an analysis at a highly disaggregated geographic level and by specific brand is needed to understand true recession effects, and how mechanisms available to executives can dampen those effects.

What then are the mechanisms by which a severe economic downturn, like the one experienced in the Great Recession, would have on explaining effects on biopharma industry demand for a specific drug? Using economic theory and practical experience on the determinants of pharmaceutical demand functions, a severe recession would have effects on specific drug demand via four mechanisms, each of which can be empirically measured:

- Disposable income effect A reduction in real (inflation-adjusted) disposable income caused by falling or stagnate wages, making the affordability and access of drugs (especially branded/biologic drugs) to patients more difficult. A decrease in disposable income relative to any out-of-pocket cost to access drugs will decrease drug demand. One should also see substitution effects in the proportion of brand/biologic drug demand relative to generic/biosimilar demand due to disposable income effects.
- 2. Unemployment/labor force participation/loss of insurance effect Higher unemployment which results in a loss of patient health/drug insurance provided by employers. Unemployed individuals can extend health insurance in most cases for 18 months though Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) post-termination, but employees pay for the full cost of the monthly health premium (employer plus employee premiums) plus a 2% service charge. The cost of COBRA insurance coverage may be beyond the means for people who are already financially strained given their loss of employment and the effects of a recession, thus may choose to drop coverage. A broader and better measure of labor market health would be the labor force participation rate, the number



of people who are employed and unemployed but actively looking for a job divided by the total number of eligible workers between the ages of 16-64. Since the Great Recession, this rate has stabilized at around 63%, a rate not seen since the mid-late 1970's.³⁴ The passing of the Patient Protection and Affordable Care Act (PPACA or ACA for short) and the availability of health insurance through exchanges not connected to employment and subsidization of premiums based on income may mitigate the effects from a poor labor market and declining access to employer-provided health insurance. The degree to which access to drug insurance through the ACA mitigates recessionary effects depends on the cost of premiums relative to people's limited income and the choice of plan.

- 3. Wealth effect A severe recession may reduce the value of financial and physical assets, e.g., respectively, changes in the value of equities and bonds versus changes in assets like the price of housing. People who are in or close to retirement may use these assets for future spending, thereby reducing drug affordability similar in response to a disposable income effect.
- 4. **Government effect** A recession depresses tax revenues, while increasing entitlement program spending for the poor that rises during a recession, which means public deficits will grow. This effect is more severe for states since governments at this level generally must run balanced budgets, causing pressures to reduce spending. This means government-

provided health insurance like Medicaid for the poor may become more restrictive in their drug benefits, especially in the demand for branded/biologic drugs, and/or shift drug demand to generic/biosimilar drugs through typical managed care control mechanisms.

The above four effects would make their impact seen on pharma drug demand in the following ways since a severe recession produces varying consequences on different segments of the population based on their relationship to the economy, e.g., a rising unemployment rate has little effect on drug demand for therapy classes dominated by patients who are elderly or retired individuals:

- Lower utilization of patented branded/biologic drugs, with greater sensitivity seen for more expensive specialty medicines (which should exhibit greater price and income elasticities).
- 2. Greater utilization of generic drugs/biosimilars as a less expensive substitute of the original molecule branded/ biologic drug. This means a severe recession will trigger greater/faster bioequivalent/biosimilar and therapeutic brand to generic substitution.
- Lower utilization of drugs in therapy classes where patients must absorb a proportionally greater out-ofpocket expense.

- 4. Lower drug compliance (the filling of a prescription received from a physician) and adherence (how patients take their medications). Lower drug adherence can be observed by patients, for example, skipping their daily medication usage spread over two days, pill splitting if pricing per mg dosage does not vary (e.g., patients buying a 20 mg of pills and splitting them into 10 mg pills).
- 5. Greater utilization of mail order relative to retail pharmacy as a channel to receive medications at a lower cost.
- 6. Greater demand for samples from physicians, especially in geographic areas or population segments that are more sensitive to changes in economic conditions.
- 7. Greater demand for enrollment in company patient assistance programs to offset the effects of losing drug coverage and affordability/access issues due to lower income from unemployment.
- 8. Patients with multiple conditions in difficult economic straits will more likely choose continuing drug therapy for symptomatic conditions over asymptomatic ones. Thus, for example, older individuals who have osteoarthritis, diabetes, and hypertension will more likely choose continuing their osteoarthritis medication over the latter conditions, even though controlling their diabetes and hypertension is likely more medically important. Therefore, a recession is likely to cause patients to make suboptimal healthcare choices.
- Greater movement by patients into catastrophic higher deductible health/drug plans since they are less expensive but will also translate into receiving less healthcare/medications given the higher out-ofpocket expense. Less access to healthcare/drugs will have adverse consequences on health outcomes and overall medical care spending.
- 10. Greater geographic variations in drug demand utilization seen around the country as the recession could generate different local and regional effects. For example, during the Great Recession, specific cities and regions were severely impacted that relied more on heavy manufacturing and auto production (like Detroit and "rust-belt" states) for their economic base, or areas severely affected by the housing collapse like Las Vegas, California, and Florida. Greater drug demand effects would be seen in local areas and regional economies that were less economically diversified and more susceptible to any one change in a recession index.

Datasets exist that capture all the above relationships which in turn can be empirically measured using various econometric model designs to support sales/marketing/payer tactics. No one saw the recession coming. **Gordon James Ramsay, OBE** Chef, restauranteur, television personality



What we know about the global financial crisis is that we don't know very much.

Paul A. Samuelson Nobel Prize-winning economist



3. Is the US Pharma Industry Prepared for the Next Great Recession?

The best educated guess, from this author (and Ph.D. economist), to the question posed above in the section heading is "no". The reason for this answer is that pharma commercial organizations by their nature and focus presume management control variables like sales, marketing, and contracting efforts directly affect prescription volume to the exclusion of external factors. Pharma commercial organizations likely are not looking at macroeconomic effects on prescription sales, nor do they have the modeling expertise and experience in analyzing such effects. In addition, the view may be that since macroeconomic conditions are beyond the impact of individual companies, their effect on prescription volume is not something that need be considered in the business planning process. This view is incorrect. While macroeconomic conditions are exogenous factors to be treated as a given by companies, it is important to know the effects of such trends on prescription volume (and other key outcomes), and what can be done to mitigate those effects.

Thus, pharma firms can do the following, given the typical risks and uncertainties of making future forecasts, when preparing for the effects of another recession:

- 1. Predict when a recession will start. Admittedly, this is challenging. However, an array of publicly developed forecasts exists from governmental institutions (e.g., Congressional Budget Office, Federal Reserve), as well as those generated through private sources (e.g., economic consulting firms, large financial institutions), and academic organizations. However, waiting for the Business Cycle Dating Committee of the NBER to proclaim officially that a recession exists is a far worse scenario. The measurement that a recession exists essentially means (there are other technical criteria, but the essential definition is stated here) that at least two consecutive guarters of an economic downturn has occurred. So, waiting for the official announcement from the NBER means at least a half-year has already passed, meaning the effects from a recession have had time to affect patients (and other healthcare system stakeholders affected by the recession (which may not be reversable), and less time for business plans to be enacted to have their full mitigating effect.
- 2. Estimate recession severity. This is critical to determine the amount and type (by channel, e.g., sales, marketing, managed markets) of resources that need to be deployed to mitigate recession effects.
- 3. **Determine how long the recession will last.** This information is necessary from a business planning standpoint to know how long resources must be devoted to mitigating recession effects at the brand level.
- 4. Assess what differential effects the recession will generate (e.g., by industrial sector, geography, sociodemographic segment, etc.). The Great Recession had differential effects by geography, industrial sector, and socio-demographics. This means overlaying the characteristics of each patient segmentation of a brand against those segments 'most versus least' affected by a recession for analysis.
- 5. Prepare contingency plans to be put immediately in place at the first sign that a recession exists. Pharma companies have a number of processes where the risks and effects of a recession to the business can be incorporated into future plans. First, brands go through quarterly and annual business reviews that assess both strategic and tactical plans. Second, prescription and financial forecasts are developed based on market and environmental trends. These forecasts can easily incorporate recession risks at the national level, but more importantly at the metropolitan area, especially

for the top local markets key to brand success. Third, companies generally create a 'risk register' or a list of future potential events that could occur (along with their likelihood of occurrence, severity of business impact, and rating of business importance or priority) that could affect business operations. The occurrence of a recession could be included on this list of potential future events that place the company at risk.

Lastly, one key difference between the Great Recession and any future recession relating to pharmaceutical demand is the availability of health/drug insurance that is now detached from employment through market exchanges via the ACA that was not in existence earlier. This means people in theory do not have to lose their coverage when they lose their job. However, if the health/drug insurance is too expensive, then unemployed people facing economic hardships will likely drop coverage because of lack of income, significantly raising the out-of-pocket drug costs, thereby decreasing patenteddrug demand and patient compliance/adherence. Also, much of the health insurance coverage expansion was for Medicaid, which for pharma companies is low-margin business and where plans generally have strong generic/biosimilar first-use step therapy controls. Also, the repeal of the ACA mandate and financial penalty has likely contributed to a rollback of healthcare coverage, making people and thus drug demand more susceptible to an economic recession. Lastly, people may choose to change the quality of their health/drug plan, from more comprehensive and lower deductible/co-pay coverage to essentially a catastrophic plan but with poor coverage and higher out-of-pocket expenses when it comes to general health/drug maintenance and coverage in order to reduce premium costs.

Thus, the conclusions from sections 1-3 are the following regarding the next recession and its effect on the US pharma industry:

- 1. Signs are building for a recession in late 2019 or 2020 according to recently surveyed economists and uncertainties concerning global economic/geopolitical conditions.
- 2. Many signs point to a potentially deeper next recession than the Great Recession of 2007-2009 given structural economic problems that still persist, slower growth outside the US, international trade issues between the

world's largest trading partners, and geopolitical risks/ uncertainties that can affect markets.

- 3. The pharma industry shift to expensive specialty medicines coupled with greater payer cost-shifting to patients means drug demand is increasing in recession sensitivity.
- 4. Despite the existence now of the ACA that was not present during the Great Recession, the ACA will likely do little to help patients pay for medicines and thus not mitigate any negative effects on drug demand when a deep recession occurs.
- 5. Issues with government debt will also mean added economic constraints by the public sector (federal and state levels) against spending increases to maintain healthcare/drug services, increasing controls against patented branded/biologic drug utilization and spending, and increasing rules favoring substitution to generic/biosimilar drugs.
- 6. Pharma companies are likely unprepared by not having the analytics and leveraging existing processes already in place to predict recessionary effects on drug demand and how to implement changes in sales, marketing, and payer tactics resulting from a deep recession.
- 7. Important relationships necessary to understand the full effects of a recession on drug demand and resulting impacts can be predicted, estimated, and assessed prior to the actual event. This means the use of model building and analytics can allow for plans to be designed and implemented to mitigate any affects from a recession on physician, patient, and payer behavior.

4. How Can Commercial Analytics Mitigate Recession-Induced Drug Demand Effects?

What role should company commercial analytics have to mitigate recession-induced drug demand effects? There is a wealth of historical economic data that exists at the local (e.g., city and metropolitan area) or regional (e.g., state) levels. Furthermore, economic forecasting companies project forward trends on the types of measures that would trigger recession-induced drug demand effects as earlier explained. Together, econometric inference models could be developed at the local/regional levels to determine the extent of drug demand effects from changes in specific economic factors relative to company management control and market-oriented variables (e.g., sales, marketing, market access). Empirical results would reveal variations by geography in these relative effects given the wide diversity of economic conditions around the country. Results from inference models could then be used to estimate future drug demand effects based on projections of economic activity and assumptions on company management control variables going forward.

There are numerous potential business insights gained from the previously-stated research path of applying commercial analytics in combination with econometric inferential and prediction models to economic and non-economic (e.g., sales, marketing, and payer variables) data on drug demand (non-exhaustive list):

- The results may reveal surprising insights, that economic trends play a much more significant role in affecting drug demand relative to management control variables than first thought. Given the growing trend toward launching expensive specialty medicines, the structure of economic variables is likely to play an even greater impact on drug demand relative to traditional sales and marketing channels. Marginal, elasticity, and relative importance (standardized coefficients) estimates could be derived from a wide range of drug demand models.
- A company can position commercial resources differently by local area according to economic dynamics. Local/regional differences in economic effects may suggest variations in managed care contracting, access to coupons, demonstration of greater drug value through promoting disease management programs, differentials in drug messaging through personal/non-personal/consumer promotion channels, etc. are all possible as a result.
- National, regional, and key local area company financial forecast accuracy could be improved by introducing the effects from economic variables. This means these models could determine the extent of any drag on financial forecasts from recessionary effects.
- Models could be used to determine not only specific drug demand by prescription type but also by payer channel and brand to generic substitution ratios. One would expect as a recession becomes more severe and lasts longer, forecasts could be developed to see how many prescriptions move from 3rd party commercial to Medicaid, or from retail to mail order.
- More advanced modeling can also be undertaken to measure the negative effects of a recession on drug utilization and adherence on patient health and



economic outcomes. The reason for this connection is due to an increasing prevalence of performance-based contracts between pharma companies and payers/ pharmacy benefit managers (PBMs). Recent published evidence looking at Detroit revealed that the Great Recession reduced overall population health.³⁵ Making such connections in real time will require the use of patient-level claims data and electronic health records along with applications of artificial intelligence (AI)/ machine learning (ML).

- Pharma companies can also understand more fully the effects of co-pay offset programs to mitigate recessionary effects on health and economic outcomes.
- Pharma companies can also use AI/ML to predict which patient segments per drug will have more affordability problems paying for medicines during a deep recessionary. Such algorithms can also be used to predict enrollment applications in patient assistance programs. See a WSJ article on similar AI/

ML applications to predict patient affordability issues and cost-offset program applications.³⁶ In addition, algorithms used in AI/ML can initiate the Next Best Action (NBA) to take per locality based on the predicted effects of changes in economic conditions.

• Analysis could also be undertaken to estimate differences in the price elasticity of demand for different drugs and by geographic region which see variations in economic distress. Such analysis will also likely pick up differences in drug price elasticities for certain life-threatening and rare conditions versus other conditions, in a similar way we should see differences between symptomatic versus asymptomatic health conditions.

The main point of the preceding bullets is that a company could be much more aware of the full extent of impacts caused by a severe recession and take management control steps to mitigate adverse effects.



5. Closing Remarks

In closing and contrary to the belief of many in the pharma industry, drug demand is becoming more recession sensitive. Various environmental industry structural changes are reinforcing this relationship. Yet, despite looming economic warning signs, this author's assessment is that pharma companies are ill-prepared to predict accurately the effects of the next recession on drug demand and patient health/ economic outcomes, and what changes in regional and locally-executed sales, marketing, and payer tactics are required to mitigate recession effects. Axtria is wellpositioned to use its extensive expertise in decision science (including real world evidence modeling), commercial operations, and large-scale data-linking to help clients address these issues. Axtria also has the internal expertise to apply macroeconomic/microeconomic theories and advanced econometric modeling to create useful tools that generate practical insights for better pharma client decisions when facing recessionary distress affecting them and the patients served by their medicines (contrary to the conclusion reached by the author of the closing quote!).

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Since the global financial crisis and recession of 2007-2009, criticism of the economics profession has intensified. The failure of all but a few professional economists to forecast the episode - the aftereffects of which still linger - has led many to question whether the economics profession contributes anything significant to society.

Robert J. Shiller American Nobel Prize-winning economist, academic, and best-selling author



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data that can identify an end-customer of a business

We have the strictest data security guidelines in place as we work with businesses to improve the experience for their customers.

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Data to Insights to Operations

Founded in 2010, Axtria is a global provider of cloud software and data analytics to the Life Sciences industry. We help Life Sciences companies transform the product commercialization journey to drive sales growth and improve healthcare outcomes for patients. We continue to leapfrog competition with platforms that deploy Artificial Intelligence and Machine Learning. Our cloud-based platforms - Axtria DataMAxTM, Axtria InsightsMAxTM, Axtria SalesIOITM, and Axtria MarketingIOTM - enable customers to efficiently manage data, leverage data science to deliver insights for sales and marketing planning, and manage end-to-end commercial operations. We help customers in the complete journey from Data to Insights to Operations.

economic

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