Reflections

April 2023

Jevons paradox – a case for Samsara

Jevons Paradox originates in mid-nineteenth-century England. A young economist William Stanley Jevons observed, in his seminal book *The Coal Question*, that despite technological advancements bringing energy efficiency, they did not lead to an overall reduction in the consumption of coal, but rather an increase.

The British iron industry provided a solid example at the time: if technology improved the fuel efficiency of a blast furnace, less coal would produce the same amount of iron. This would increase profits, attract more investment, lower prices, increase demand for iron, and ergo coal – offsetting the reduced coal consumption from the efficiency gains.

Unbeknown to economists of the second industrial revolution, today's economy has a new fuel – data. And the paradox continues to hold.

Since the turn of the millennium, we have seen vast digitisation across industries, which has introduced immense efficiencies and unlocked unprecedented volumes of data. Availability and interpretation of this data have made it increasingly easy to answer many of life's questions. But as we continue to unearth new data types, the number of questions we can ask of it is limitless, perpetuating growth. And yet there remain several fresh categories with unharvested data.

Astoundingly, businesses with some form of physical assets make up as much as 40 per cent of global GDP, yet this is a nascent software market. It is plausible to imagine clipboards with paper inspection sheets, routes mapped out with string and pins, and actual filing cabinets.

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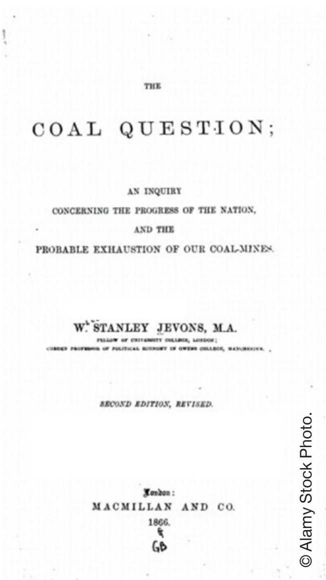

THE

COAL QUESTION;

AN INQUIRY
CONCERNING THE PROGRESS OF THE NATION,
AND THE
PROBABLE EXHAUSTION OF OUR COAL-MINES.

W. STANLEY JEVONS, M.A.

SECOND EDITION, REVISED.

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1866.

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Enter Samsara, the San Francisco-based company looking to turn commercial vehicles, trailers, industrial equipment and warehouses into smart assets.

This largely greenfield opportunity is in a fragmented market, with no incumbent to displace, and a rare example where Microsoft is not already operating. This begs the question, is it just too complex? Samsara's phenomenally rapid growth since its founding only seven years ago suggests otherwise.

To tackle this beast, Samsara began with commercial vehicles. These links turn an otherwise complex and heterogenous market into a coherent and addressable opportunity, as businesses with any physical operations will likely operate vehicles.

Nearly 90 per cent of Samsara's annual recurring revenue comes from video-based safety for vehicles (data from AI dash cameras) and vehicle telematics (GPS location data). Samsara's value-add is in accessing, cleaning and aggregating vast amounts of previously inaccessible data to provide insights to its customers – insights that can improve business outcomes.

Samsara currently provides sensors to unlock the market, given the low level of existing connectivity in older assets. Newer commercial vehicles, however, have telematics built in. Over time and regular asset replacement cycles, this will obviate the need for Samsara to provide hardware, increasing scalability and improving margins.

A further tailwind behind Samsara's growth comes from the increasing need to manage complex environmental and safety compliance.

Electronic logging devices (ELDs) automatically record driving time in commercial vehicles to ensure drivers comply with hours-of-service mandates, making roads safer. The direction of travel in compliance is toward increasing safety requirements and greater concern about the environmental footprint. Samsara is positioned on the right side of these structural trends.

Beyond vehicles, its product roadmap is entirely driven by customer demand. And being the first mover in commercial vehicles creates a competitive advantage in its evolving product suite. Sanjit Biswas, chief executive and co-founder, spends one-third of his time checking in with customers to solicit feedback on the current product offering and help with product development.

The flywheel here stems from both the intra-customer and inter-customer scale advantages from a growing data set. The more physical assets a company has attached Samsara licenses to, the more complete its visibility over its operations and, therefore, the more useful Samsara becomes.

The more customers it has in a particular region or industry, the richer the context it provides on relative fuel efficiency, driver safety, progress in fleet electrification etc. Armed with this data, operations managers know which levers would be most impactful in improving competitiveness.

Unsurprisingly, Samsara boasts a net retention rate exceeding 100 per cent.

As with Jevons' coal, the increased efficiencies from Samsara's insights lead to greater consumption, which places the company in a tantalising inflexion point for physical assets.

Important information and risk factors

Annual past performance to 31 March each year (net %)

	2019	2020	2021	2022	2023
LTGG Composite	8.4	10.7	104.4	-18.1	-18.1
MSCI ACWI	3.2	-10.8	55.3	7.7	-7.0

Annualised returns to 31 March 2023 (net %)

	1 Year	5 Years	10 Years	Since Inception*
LTGG Composite	-18.1	10.5	15.2	11.4
MSCI ACWI	-7.0	7.5	8.6	7.6

*Inception date 29 February 2004.

Source: Baillie Gifford & Co and MSCI. US Dollars.

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