Uncommon truths
Virtual clusters favour regions over large cities

History suggests that old habits die hard but technology could permit real change in reaction to Covid-19. We examine implications for the big city/regional divide and consumer behaviour.

Covid-19 has changed our lives in ways that we could not imagine at the start of the year. How many of these changes will endure and what will be the implications for asset allocators (both personally and professionally)? Starting from the current situation, we use historical precedent and survey-based data to try to imagine what the future may hold.

Prior to Covid-19, the financial industry was largely organised in clusters such as London, New York and Tokyo[1]. The industry was largely office based: for example, prior to Covid-19, it is reckoned that only around 5% of UK finance industry staff worked mainly from home (the same statistic applies to all UK workers irrespective of industry)[2]. Those large clusters supported an ecosystem of ancillary services (lawyers, accountants, restaurants, hairdressers etc.) and relied heavily on public transport systems. The industry also generated a lot of travel (domestic and international) to facilitate client/business meetings.

Covid-19 turned many of those statistics on their head.

For example, an Ipsos MORI poll conducted at the end of April found that only 7% of London based workers were going to their place of work in the way they had done before the outbreak (the proportion was 12% for the UK as a whole)[3]. Use of public transport systems plummeted (that same Ipsos MORI poll found that only 4% of Londoners were using public transport in the usual way at end-April) and international travel became virtually non-existent (for example, Heathrow and San Francisco Airport April passenger numbers were only 3% of the year ago level)[4,5].

Of course, things have started to normalise. **Figure 1** shows our global average measure of national Google mobility trends data and suggests that mobility bottomed in early-mid April. Normalisation has come first for grocery and pharmacy shopping, which are the closest things we have to essential shopping (of which, more later). Retail & recreation is next in line but has still not normalised, while activity around workplaces and transit stations appears to have flattened or decreased in recent weeks, perhaps due to holidays. Data from Heathrow and San Francisco airports suggests some improvement, with June passenger numbers 5% and 10% of year ago levels, respectively (San Francisco international flight passenger numbers were still only 3% of the year ago level).

Figure 1 – Global Google mobility trends and Blavatnik Stringency
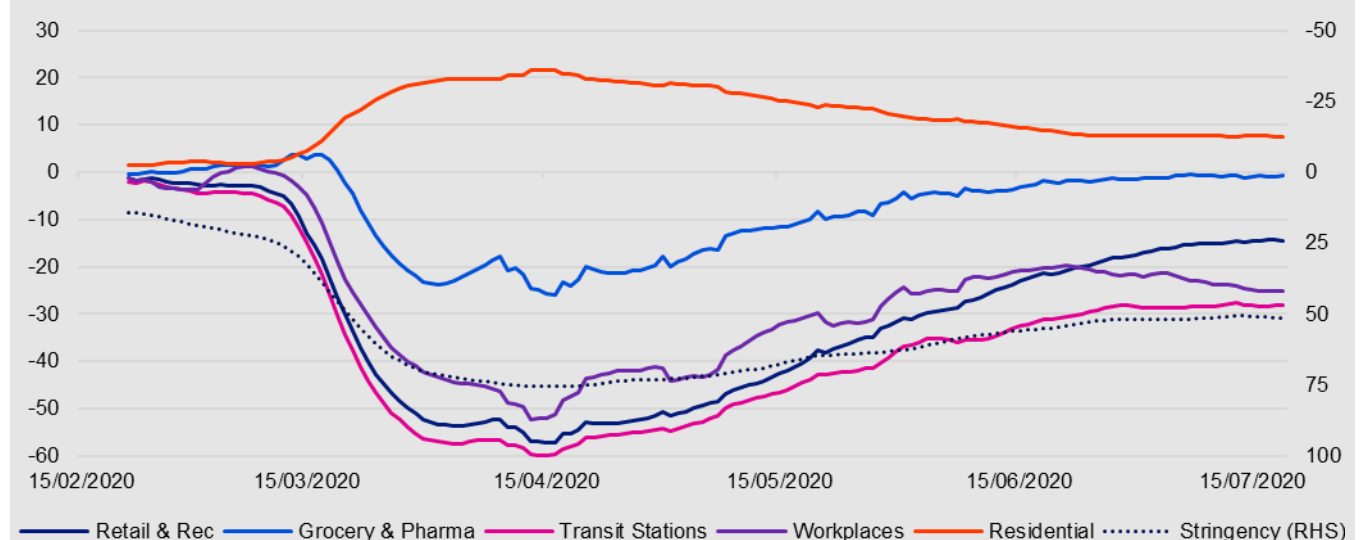
Note: Daily data shown as 7-day moving averages from 15 February 2020 to 19 July 2020. Google mobility trends indices show percentage deviation from the baseline and are sourced from Google LLC "Google COVID-19 Community Mobility Reports". https://www.google.com/covid19/mobility/ Accessed: 24/07/20. These datasets show how visits and length of stay at different places change compared to a baseline (the median value, for the corresponding day of the week, during the 5-week period Jan 3–Feb 6, 2020). The "Blavatnik Stringency Index" is the Oxford Covid-19 Government Response Stringency Index from the Blavatnik School of Government, Oxford. It measures the stringency of government responses to Covid-19, including the extent of school, business and travel shut-downs but also includes policy measures (both monetary and fiscal) and healthcare actions (testing etc.). The index ranges from 0 to 100, with higher scores indicating a more stringent response. The above indices are constructed as simple averages of the indices for the following countries: Australia, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Hong Kong, India, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Philippines, Singapore, South Korea, Spain, Sweden, Switzerland, Taiwan, United Kingdom and United States of America. Source: Google, Blavatnik School of Government, University of Oxford and Invesco

There seems to be less concern about Covid-19 than a few months ago, with the regular IPSOS "What Worries the World" survey finding that 47% of respondents in the 27 countries covered cited Covid-19 as a top concern for their country in June, down from 63% in April[6]. However, it remains the top concern and has caused unemployment to become a bigger concern that it was (cited by 31% of respondents in January and 42% in June, making it the second biggest concern).

Covid-19 may not be the concern it was a few months ago but there is still reticence about going back to previous behaviour patterns. For example, an Ipsos poll in June showed that while 69% of UK respondents felt very/fairly comfortable with meeting friends and family from outside their household, the proportion feeling very/fairly comfortable with going to their place of work was only 52% (with 34% not very/at all comfortable)[7]. That survey showed an even greater reticence to undertake recreational activities. The proportions that were very or fairly comfortable with various activities were: hairdresser (40%), bars & restaurants (29%), public transport (25%), indoor cinema & theatre (25%), holidays abroad (24%), gyms (20%) and sport/music events (15%).

It is not just the UK. A similar IPSOS survey in the United Arab Emirates (UAE) reveals that two-thirds of respondents think it will take longer than six months before things get back to normal (2% think they will never get back to normal and 10% think it will take two years or longer)[8]. Concerning their own behaviour, only 12% believe they will return to doing everything the same as before, while 50% think they will make many changes or that their life will change completely.

Lessons from the Spanish Flu pandemic

That UAE survey suggests there could be lingering effects on our lifestyles. Is there any evidence from previous pandemics about durable changes in behaviour? Obvious examples are the wearing of face masks and use of hand sanitisers/hand washing, which had become popular even before Covid-19.

Though face masks and hand washing may be traced in recent times to outbreaks such as SARS, Avian Flu and Swine Flu, they go back to at least the Spanish Flu pandemic ("*Obey the laws, And wear the gauze, Protect your jaws, From Septic Paws*")[9,10]. In fact, it is surprising how much of what is happening now is reminiscent of what happened during the Spanish Flu pandemic of 1918-19. The following measures were then used in some combination across a range of countries: hand washing/hygiene, face masks, social distancing, isolation/quarantine, closure of schools, cinemas, theatres etc., discouragement of public transport, staggered work shifts and limitations on non-essential meetings. The same debates were had about health versus wealth, though a recent analysis suggests there was no such trade-off, with economic damage wrought by the pandemic itself rather than by preventative healthcare interventions[11].

The Spanish Flu pandemic came in three waves (in the US they were in the spring of 1918, autumn of 1918 and, finally, winter/early spring 2019). In the US (and many other countries) the second wave was the deadliest, killing an estimated 195,000 Americans during the month of October 1918, for example (it is estimated that Spanish Flu killed at least 50 million people worldwide)[12]. It may have contributed to the 1919-21 recession in the US (see **Figure 2**).

Figure 2 – US economic metrics 1914-24

Legend: GDP growth (%) — CPI (%, yoy) — Govt Debt/GDP (%, RHS) — Tax rate (%, RHS)
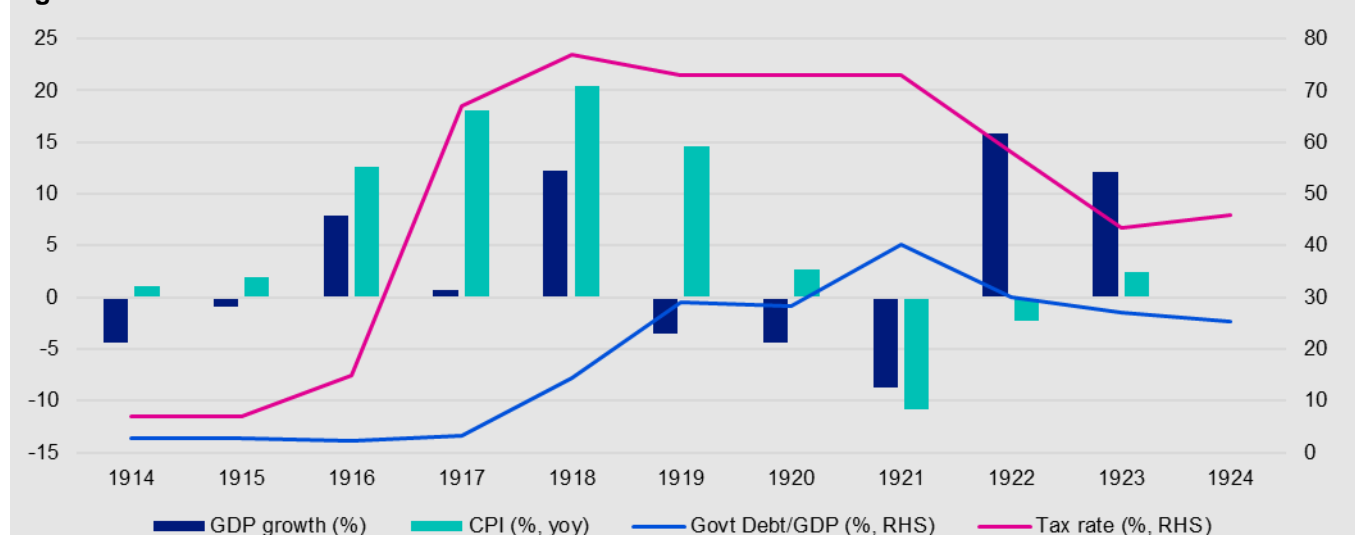
Note: Based on annual data from 1914 to 1924 (CPI changes are measured from one year-end to the next). "Tax rate" is the highest marginal income tax rate, as reported by the Tax Policy Center. Source: Global Financial Data, Tax Policy Center and Invesco

Spanish flu was clearly a different beast to Covid-19, with up to a third of the world population infected and 10%-20% of those infected dying. Though a recent report suggests that around 25% of people in Delhi have been infected with Covid-19[13], most estimates from elsewhere suggest lower rates of infection (5%-6% in Germany, the UK and US, for example)[14] and the global case fatality rate appears to be more like 4% (according to WHO data).

It is our presumption that Spanish Flu depressed economic activity in the 1918-21 period due to the sudden loss of labour supply and through changed behaviour patterns. However, disentangling the economic effects of Spanish Flu from those of the ending of World War 1 (WW1) are difficult, so it is hard to be sure that all of the US recession in 1919-21 was due to the pandemic (the UK and Canada suffered a similar fate but it wasn't the case for all countries). The prolonged nature of that recession could be evidence of lingering caution on the part of individuals, but it is hard to be sure.

To the extent that Spanish Flu exacerbated the rise in US government debt that had already started during WW1 (see **Figure 2**), it may have been responsible for keeping tax rates higher than they would otherwise have been. France and the UK ended WW1 with government debt/GDP ratios at or above 100% and then experienced further sharp rises, so that by 1922 their debt ratios were 173% and 250%, respectively. In the UK, this meant that income tax rates had to stay high and that the profits tax could not be abolished (as many wanted), though Churchill's idea of a wealth tax was resisted[15].
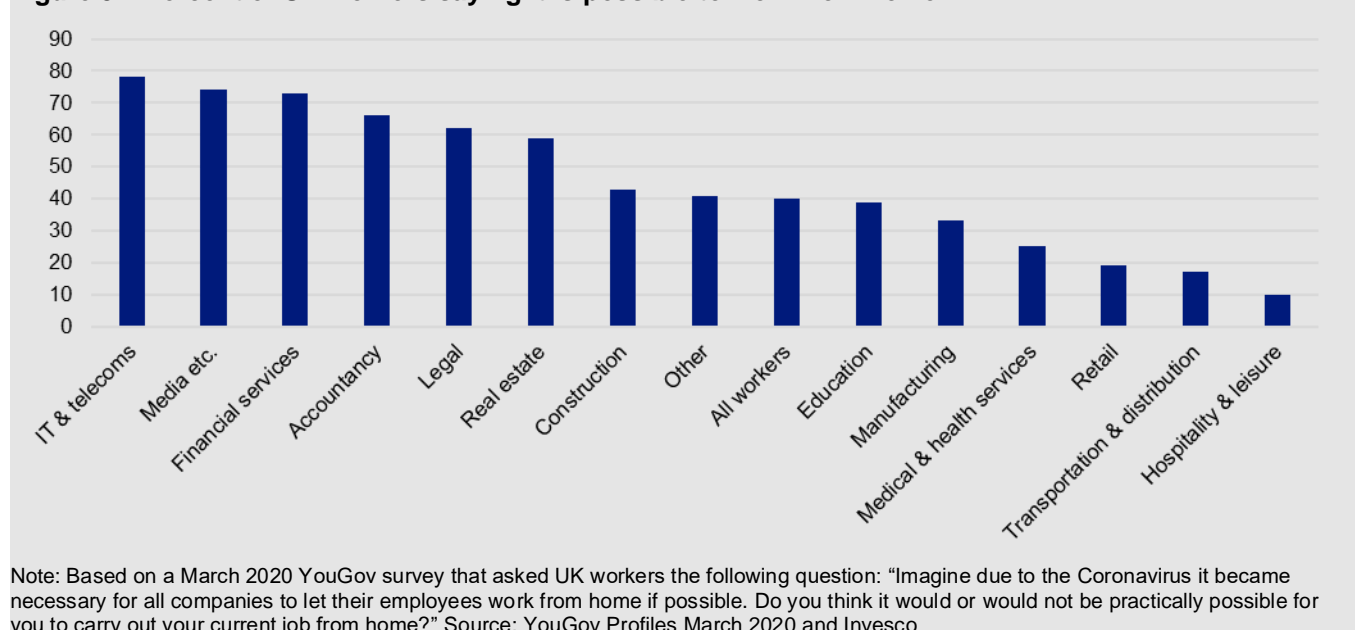
So, there was clearly a change in behaviour during the Spanish Flu pandemic. We have listed ways in which that was imposed by governments but it is also likely that measures were taken voluntarily by individuals. Judging by the length of the recessions in the US and the UK, behavioural normality did not return for several years. However, **Figure 2** suggests growth did eventually return and "normal" business would appear to have resumed by the mid-1920s.

Technology could be the difference this time

If we eventually get on top of Covid-19, and believing that normality was eventually resumed after Spanish Flu, why shouldn't we return to pre-Covid behaviours within five years? We can think of several overlapping reasons: first, some of the current behavioural changes simply represent an acceleration of previous trends; second, Covid-19 has been a catalyst for actions that had been collectively desirable but for which we didn't have the individual incentives and, third, governments face urgent budgetary constraints.

There are three prevailing trends that we believe have been reinforced by Covid-19: work from home, virtual meetings and internet shopping. As noted above, only 5% of UK workers said they mainly worked from home prior to Covid-19 (though 27% said they had worked from home at some point). We now know that it can be done and that it brings many lifestyle benefits and could reduce the cost of corporate premises (while maintaining productivity). So, why wouldn't we continue working in this way? Of course, some industries are more suited than others to a work from home ethos (see **Figure 3**) but finance and satellite services appear well placed.

Figure 3 – Percent of UK workers saying it is possible to work from home

Note: Based on a March 2020 YouGov survey that asked UK workers the following question: "Imagine due to the Coronavirus it became necessary for all companies to let their employees work from home if possible. Do you think it would or would not be practically possible for you to carry out your current job from home?" Source: YouGov Profiles March 2020 and Invesco

Working from home was not possible at the time of Spanish Flu but technology (and up to six months of making it work in practice before the new school year starts) mean that it is now a very real possibility for a large proportion of workers. Hence, the roughly 50% of workers who feel uneasy about returning to the workplace (according to the above quoted UK and UAE Ipsos surveys) are likely to continue working from home for the foreseeable future. We believe the longer the initial period spent working from home, the more likely it is to become a permanent arrangement (though 47% of UK workers surveyed by Visier expect their employer to revert to previous practices, 28% do not expect a return to inflexible working[16]).

The other imperative arguing in favour of working from home and conducting more virtual (rather than in-person) meetings is the mitigation of climate change. Flying and hotels had become an everyday part of many of our working lives and for some represented a large part of unsustainable personal carbon footprints. For example, flights and hotels accounted for roughly two-thirds of my 63 tonne per year carbon footprint (see Climate change: a drag or an opportunity?). We have now confirmed what we already suspected (that much of this travel was unnecessary) and have seen the benefits of reducing pollution in general. Covid-19 may have been the catalyst for us to do the right thing.

The other obvious prevailing trend that has been accelerated by Covid-19 is e-commerce, with many using internet shopping and home delivery either for the first time or for items that we would not previously have considered. A McKinsey & Company survey across 45 countries reveals that online shopping has become more common in most countries during the pandemic (with most categories seeing a bigger than 10% gain)[17]. China is the obvious exception due to the already extensive use of such shopping methods.

Many surveys (for example, the IPSOS UK and UAE versions mentioned above) show a reluctance to return to shops, though **Figure 1** shows that shopping for essential items may have normalised (see the "Grocery & Pharma" category). The McKinsey survey confirms that shopping for essentials is the reason most likely for individuals to leave their homes but it also reveals a number of other changes to spending patterns: a search for greater value (trading down), de-prioritisation of travel and other big ticket items, less brand loyalty (products and retailers) and raised health concerns (hygiene within shops and treatment of staff).

Some of these changes may be specific to current circumstances and therefore temporary (emphasis on value, health concerns, for example). However, others may have longer term implications (move to online, less brand loyalty and, perhaps, a shift from "consumerism"

to "well-being"). The shift away from "consumerism" may reflect not only the threat of unemployment and lower incomes but also rising household debt levels, which could prolong the impact.

Who will now rescue government finances?
Many governments have taken urgent action to protect household and business cash flows. This may have prevented deep recessions becoming depressions but has increased public sector debt burdens. For example, when the UK's Office for Budget Responsibility published its March 2020 Budget forecast, it imagined UK public sector net debt falling from 80.6% of GDP in the 2018-19 fiscal year to 75.0% in 2021-22 (where it was expected to stabilise). However, in its July 2020 Fiscal Sustainability Report[18], its central scenario now envisages net debt rising to 104.1% of GDP in 2020-21 (with a forecast range of 94.8% to 113.2%). It is then expected to remain around 104% over the next few years. To put this in perspective, consider that UK public sector net debt was 27.2% of GDP in 2000-01, which is smaller than the roughly 30% of GDP Covid-19 impact implied by the OBR's central scenario for 2020-21.

Governments face a choice: run with higher debt, raise taxes (including inflation) or cut spending. We believe an argument can be made for running with higher debt, based on the current exceptionally low level of bond yields. However, we don't know how long the latter will last and such an approach leaves less scope to deal with future crises. Hence, we suspect that most governments will choose a combination of all three: taxes will rise, spending will fall and debt ratios will be higher than previously imagined (with prayers for inflation thrown in). But let's not underestimate the problem: after the financial crisis, the UK's public sector net debt to GDP ratio didn't peak until 2016-17 (82.9%) and the OBR central scenario suggests it will balloon to a staggering 418.4% by 2069-70 if nothing changes (up from the 289.6% forecast at the time of the March 2020 Budget and 191.6% forecast in October 2018).

Financing debt burdens of that magnitude would normally require higher yields. OBR data shows that UK public sector net debt to GDP was above 100% from 1916-17 until 1960-61, a period when 10-year gilt yields averaged 4.0% or an inflation adjusted 1.6% (based on annual data using year-end yields and CPI inflation from year-end to year-end). As we have often argued, debt is largely a developed world problem (see Global debt review 2020, for example) but developed world central banks have so far manged to depress yields via asset purchases. When those policies come to an end, we would expect an upward adjustment of yields, particularly in the developed world. That is a danger, especially given those long-term OBR forecasts (and the UK is not alone in this).

Given that we think markets will eventually impose fiscal discipline, we believe that governments will be forced to raise taxes (with higher incomes, profits and wealth the obvious and least electorally costly targets, especially given the rise in inequality that we expect). That suggests lower post-tax profits (negative for equities, credit and real estate), less share buybacks due to higher capital gains taxes (negative for equities) and less disposable income, especially for high income/wealthy households (more focus on essential items and less "frivolity", which is positive for products and retailers deemed to provide "value" and negative for purveyors of luxury goods and international travel). These changes could endure for many years.

We believe that government spending will need to be restrained but this will be difficult in an environment where health and social spending was already on the rise and where healthcare spending is now likely to receive a Covid-19 boost. Many countries (including the UK) have already scaled back expenditure but, no matter how it is presented, further rounds of austerity seem inevitable. Defence, education and infrastructure may eventually be squeezed, along with the incomes of public sector employees and those receiving state benefits. Politicians face incredibly difficult choices but, in our opinion, the healthcare sector may be better protected than others such as aerospace & defence and construction.

From physical to virtual clusters
Leaving behind governments and thinking about how changes to working habits could impact the broader economy, there are obvious beneficiaries such as providers of the communication tools and services that enable home working, while the travel and hospitality sectors will suffer the consequences.

However, those factors are well known and we think have been priced-in to the relevant assets (at least partially). We wish to consider a less discussed implication, that of the potential demise of clusters and large cities. Clusters involve the gathering of the skill and resource sets necessary for an industry, along with all the necessary ancillary services. Good historical examples were the placing of steel mills near coal mines, while Silicon Valley is a good modern-day example. Financial centres such as London and New York have gathered the human capital required to work in banks, say, along with the insurance, legal and accounting expertise necessary to support them. Large workforces require housing, transport, food, beverage and other services to support and entertain them.

However, many of the employees in cities such as London and New York live outside the area where they work and Covid-19 work-from-home practices have reduced the flow of commuters, thereby rendering

many city centres like ghost towns. Suddenly, there has been less need for city centre office space and for the services that have supported that commuting workforce (public transport, shops, cafes, restaurants, bars, hairdressers etc.).

If working from home becomes a more common practice in some of the industries to the left of **Figure 3**, then we imagine that physical clustering could be replaced by a virtual variety. If there is less need to be physically present to fulfil an occupational role, we have greater freedom to choose where we live and where we spend our money. This could permit a dispersal of workers, thus reversing the concentrations so prevalent during our lifetimes. I may have preferred to return to York after my education, rather than move to London (then New York and Paris) but the jobs didn't exist, nor did the work-from-home technology (the fax machine had only just been invented and it was some time before PCs, mobile phones, emails and the internet were popularised).

The implications of a shift to virtual clusters could include less demand for city centre office space, less demand for city centre family accommodation and less demand for the city centre services used by workers (shops, restaurants, pubs etc.). That could have negative consequences for office rentals and values, likewise family accommodation units and for the above-mentioned service businesses (including public transport systems).

That doesn't sound good but, were it to happen, we believe there would be an offsetting boost to housing in areas outside of large cities, along with increased opportunities for retail, hospitality and other services in those far-flung areas (money not spent in the cities would be spent elsewhere). City centre high streets could suffer but high streets in smaller towns could see a revival. If internet shopping continues to grow, then retail real estate could suffer but the demand for warehousing would rise. Finally, large cities are unlikely to die but rather be repurposed: we believe they will continue to be hubs for the arts and entertainment but that falling accommodation costs may allow them to be repopulated by the younger generations that cannot currently afford to live there.

Conclusions
In conclusion, Covid-19 has caused big changes in behaviour, some enforced, some voluntary. Many of those changes may eventually be reversed but we believe some will not. We think that changed working patterns may cause a re-emphasis on regional economies, at the expense of large cities. Higher taxation could penalise assets such as equities, credit and real estate, while changing consumer behaviour could favour "value assets" over "frivolity assets".

References:
1. See for example Financial services clustering and its significance for London published by Manchester Business School and Loughborough University in February 2003.
2. https://www.businesscomparison.com/uk/blog/remote-working-report/
3. https://www.ipsos.com/ipsos_mori_coronavirus_polling_31042020.pdf
4. https://www.heathrow.com/company/investor-centre/reports/traffic-statistics
5. https://www.flysfo.com/media/facts-statistics/air-traffic-statistics/2020
6. https://www.ipsos.com/en/what-worries-world-june-2020
7. https://www.ipsos.com/ipsos-mori/en-uk/how-comfortable-are-britons-returning-normal-coronavirus-concern-rises-again
8. https://www.ipsos.com/sites/default/files/ct/news/documents/2020-07/returning_to_normal_-_uae_edition.pdf
9. https://qz.com/299003/a-quick-history-of-why-asians-wear-surgical-masks-in-public/
10. https://virus.stanford.edu/uda/fluresponse.html
11. Correia, Sergio and Luck, Stephan and Verner, Emil, Pandemics Depress the Economy, Public Health Interventions Do Not: Evidence from the 1918 Flu (June 5, 2020). Available at SSRN: https://ssrn.com/abstract=3561560 or http://dx.doi.org/10.2139/ssrn.3561560
12. https://www.cdc.gov/flu/pandemic-resources/1918-commemoration/pandemic-timeline-1918.htm
13. https://www.bbc.co.uk/news/world-asia-india-53485039
14. https://www.newscientist.com/article/mg24632873-000-how-many-of-us-are-likely-to-have-caught-the-coronavirus-so-far/
15. Martin Daunton: Churchill at the Treasury: Remaking Conservative Taxation Policy 1924-29 In: Revue belge de philologie et d'histoire, tome 75, fasc. 4, 1997. Histoire medievale, moderne et contemporaine - Middeleeuwse, moderne en hedendaagse geschiedenis. pp. 1063-1083
16. https://www.personneltoday.com/hr/remote-working-after-covid-19-coronavirus/
17. https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/a-global-view-of-how-consumer-behavior-is-changing-amid-covid-19#
18. https://cdn.obr.uk/OBR_FSR_July_2020.pdf

Unless stated otherwise, all data as of 24 July 2020.

Figure 4 – Asset class total returns

Data as at 24/07/2020	Index	Current Level/RY	Total Return (USD, %)					Total Return (Local Currency, %)				
			1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Equities												
World	MSCI	548	0.0	5.3	4.5	-1.7	5.5	-0.5	4.6	3.6	-1.7	5.1
Emerging Markets	MSCI	1060	0.6	5.6	7.1	-3.2	3.3	0.3	5.3	6.4	0.7	7.7
US	MSCI	3096	-0.4	5.8	4.0	1.7	9.6	-0.4	5.8	4.0	1.7	9.6
Europe	MSCI	1615	0.2	6.0	5.5	-7.6	-0.8	-1.6	2.9	1.9	-9.5	-4.8
Europe ex-UK	MSCI	2026	0.4	7.0	6.3	-2.9	4.1	-1.3	3.7	2.7	-6.5	-0.7
UK	MSCI	921	-0.7	2.7	2.6	-21.2	-14.8	-2.7	0.0	-0.8	-18.4	-16.7
Japan	MSCI	3255	1.2	0.9	3.2	-4.0	5.4	0.0	-0.1	1.2	-6.5	3.3
Government Bonds												
World	BofA-ML	0.23	1.2	2.0	2.3	6.4	7.2	0.3	0.7	0.5	4.9	5.3
Emerging Markets	BBloom	5.00	1.6	4.0	4.0	1.3	3.0	1.6	4.0	4.0	1.3	3.0
US (10y)	Datastream	0.59	0.4	1.1	0.7	15.5	17.9	0.4	1.1	0.7	15.5	17.9
Europe	Bofa-ML	0.00	2.2	4.0	4.2	6.4	7.8	0.4	0.8	0.7	2.8	3.3
Europe ex-UK (EMU, 10y)	Datastream	-0.48	1.7	3.2	3.3	6.6	5.2	-0.1	0.1	-0.2	2.9	0.8
UK (10y)	Datastream	0.09	2.2	3.3	3.8	3.5	9.0	0.2	0.6	0.3	7.2	6.5
Japan (10y)	Datastream	0.02	1.2	1.1	2.2	2.5	0.8	0.0	0.1	0.2	-0.1	-1.3
IG Corporate Bonds												
Global	BofA-ML	1.69	1.4	3.3	3.4	6.1	9.3	0.8	2.4	2.3	5.5	8.2
Emerging Markets	BBloom	4.45	1.3	2.7	2.9	4.2	10.1	1.3	2.7	2.9	4.2	10.1
US	BofA-ML	2.00	1.0	3.1	2.9	7.9	12.1	1.0	3.1	2.9	7.9	12.1
Europe	BofA-ML	0.72	2.2	4.3	4.7	3.4	4.0	0.4	1.1	1.2	-0.1	-0.3
UK	BofA-ML	1.82	2.6	4.3	5.0	1.1	8.6	0.6	1.6	1.5	4.7	6.1
Japan	BofA-ML	0.49	1.2	1.2	2.1	2.4	1.7	0.0	0.2	0.2	-0.2	-0.4
HY Corporate Bonds												
Global	BofA-ML	6.07	1.6	3.1	3.8	-0.5	3.1	1.3	2.5	3.2	-1.1	2.4
US	BofA-ML	6.13	1.5	2.8	3.9	-1.1	2.4	1.5	2.8	3.9	-1.1	2.4
Europe	BofA-ML	4.31	2.7	4.9	5.6	0.3	3.7	1.0	1.8	2.0	-3.1	-0.6
Cash (Overnight LIBOR)												
US		0.09	0.0	0.0	0.0	0.3	1.1	0.0	0.0	0.0	0.3	1.1
Euro Area		-0.58	2.0	3.5	3.7	3.6	4.0	0.0	0.0	0.0	-0.3	-0.6
UK		0.05	1.8	3.0	3.1	-3.4	2.9	0.0	0.0	0.0	0.2	0.5
Japan		-0.09	0.8	0.8	1.7	2.3	1.8	0.0	0.0	0.0	-0.1	-0.1
Real Estate (REITs)												
Global	FTSE	1570	-0.4	0.3	0.1	-21.0	-16.3	-2.1	-2.7	-3.3	-23.7	-19.8
Emerging Markets	FTSE	1923	-1.4	0.9	2.8	-20.0	-13.4	-3.1	-2.2	-0.7	-22.8	-17.0
US	FTSE	2476	-0.8	1.0	-1.3	-21.7	-17.7	-0.8	1.0	-1.3	-21.7	-17.7
Europe ex-UK	FTSE	3124	1.6	3.5	3.3	-15.1	-5.0	-0.1	0.4	-0.2	-18.0	-8.9
UK	FTSE	1145	1.3	2.3	2.9	-27.2	-9.4	-0.7	-0.5	-0.6	-24.6	-11.4
Japan	FTSE	2352	1.0	-2.0	1.1	-20.5	-14.4	-0.3	-3.0	-0.8	-22.6	-16.2
Commodities												
All	GSCI	1724	1.4	6.6	4.5	-33.5	-30.0	-	-	-	-	-
Energy	GSCI	241	1.8	7.7	5.1	-51.5	-47.2	-	-	-	-	-
Industrial Metals	GSCI	1185	1.0	8.3	5.9	-2.7	-3.1	-	-	-	-	-
Precious Metals	GSCI	2207	5.9	8.5	6.7	23.4	31.3	-	-	-	-	-
Agricultural Goods	GSCI	305	-0.4	3.1	1.0	-12.4	-11.9	-	-	-	-	-
Currencies (vs USD)*												
EUR		1.17	2.0	3.6	3.8	4.0	4.6	-	-	-	-	-
JPY		106.14	0.8	0.9	1.7	2.3	1.9	-	-	-	-	-
GBP		1.28	2.0	2.7	3.5	-3.5	2.3	-	-	-	-	-
CHF		1.09	2.0	3.0	2.9	5.1	7.0	-	-	-	-	-
CNY		7.02	-0.3	0.9	0.7	-0.8	-2.1	-	-	-	-	-

Notes: *The currency section is organised so that in all cases the numbers show the movement in the mentioned currency versus USD (+ve indicates appreciation, -ve indicates depreciation). Past performance is no guarantee of future results. Please see appendix for definitions, methodology and disclaimers.
Source: Refinitiv Datastream and Invesco

Figure 5 – World equity sector total returns relative to market (%)

Data as at 24/07/2020	Global				
	1w	**1m**	**QTD**	**YTD**	**12m**
Energy	**0.8**	**-4.0**	**-2.8**	**-27.5**	**-30.6**
Basic Materials	**1.7**	**4.6**	**4.3**	**3.4**	**3.3**
Basic Resources	2.4	5.6	5.5	5.2	7.3
Chemicals	0.9	3.5	2.9	1.4	-1.5
Industrials	**0.3**	**0.5**	**-0.2**	**-4.3**	**-4.7**
Construction & Materials	0.8	1.8	1.3	-4.7	-2.8
Industrial Goods & Services	0.2	0.4	-0.5	-4.3	-4.9
Consumer Discretionary	**0.0**	**0.8**	**1.0**	**5.0**	**3.8**
Automobiles & Parts	-0.7	5.1	4.9	3.1	5.0
Media	-0.8	0.3	0.9	-3.9	-4.7
Retailers	0.8	1.8	1.7	24.1	22.2
Travel & Leisure	-1.5	-4.0	-2.3	-22.6	-24.8
Consumer Products & Services	0.1	0.1	0.0	4.7	4.4
Consumer Staples	**1.0**	**0.3**	**0.5**	**0.7**	**-2.3**
Food, Beverage & Tobacco	1.1	0.1	0.7	-2.6	-8.1
Personal Care, Drug & Grocery Stores	0.8	0.7	0.2	7.0	5.7
Healthcare	**-1.1**	**-0.3**	**-0.6**	**11.5**	**16.4**
Financials	**0.6**	**-0.4**	**0.1**	**-16.3**	**-16.8**
Banks	0.6	-2.7	-1.5	-23.3	-24.0
Financial Services	0.6	1.4	1.1	-6.8	-6.0
Insurance	0.5	1.9	1.8	-12.7	-14.0
Real Estate	**-0.4**	**-3.6**	**-3.2**	**-12.2**	**-13.1**
Technology	**-1.0**	**-0.2**	**-0.6**	**21.9**	**27.3**
Telecommunications	**-0.1**	**-0.6**	**-0.2**	**1.9**	**-1.3**
Utilities	**0.0**	**1.3**	**1.6**	**-0.8**	**-1.6**

Notes: Returns shown are for Datastream sector indices versus the total market index. Past performance is no guarantee of future results.
Source: Refinitiv Datastream and Invesco

Figure 6a – US factor index total returns (%)

Data as at 24/07/2020	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Growth	0.1	5.3	34.7	5.7	13.4	0.4	-0.2	7.6	5.0	4.4
Low volatility	0.6	7.8	25.2	5.2	10.2	0.8	2.1	0.0	4.5	1.5
Price momentum	-0.3	6.4	25.6	3.2	6.5	0.0	0.8	0.4	2.6	-1.9
Quality	0.3	7.3	26.9	-5.4	0.8	0.6	1.6	1.4	-6.0	-7.2
Size	0.6	7.0	36.3	-20.1	-16.3	0.9	1.3	8.9	-20.6	-22.9
Value	0.8	4.0	35.6	-21.5	-16.7	1.1	-1.5	8.4	-22.0	-23.3
Market	-0.3	5.5	25.1	0.6	8.6					
Market - Equal-Weighted	0.3	6.8	26.9	-7.0	-1.3					

Notes: All indices are subsets of the S&P 500 index, they are rebalanced monthly, use data in US dollars and are equal-weighted. Growth includes stocks in the top third based on both their 5-year sales per share trend and their internal growth rate (the product of the 5-year average return on equity and the retention ratio); Low volatility includes stocks in the bottom quintile based on the standard deviation of their daily returns in the previous three months; Price momentum includes stocks in the top quintile based on their performance in the previous 12 months; Quality includes stocks in the top third based on both their return on invested capital and their EBIT to EV ratio (earnings before interest and taxes to enterprise value); Size includes stocks in the bottom quintile based on their market value in US dollars. Value includes stocks in the bottom quintile based on their price to book value ratios. The market represents the S&P 500 index. Past performance is no guarantee of future results.
Source: Refinitiv Datastream and Invesco

Figure 6b – European factor index total returns relative to market (%)

Data as at 24/07/2020	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Growth	-0.8	4.3	26.4	2.6	12.1	0.6	1.2	8.8	13.8	16.2
Low volatility	-0.4	2.8	16.7	-5.0	1.5	1.0	-0.3	0.4	5.4	5.3
Price momentum	-0.9	5.0	23.2	3.1	11.2	0.5	1.9	6.1	14.4	15.3
Quality	-0.5	3.2	22.1	-12.4	-1.7	0.9	0.2	5.1	-2.8	1.9
Size	0.1	1.6	23.6	-16.5	-4.5	1.6	-1.4	6.4	-7.3	-0.9
Value	-1.7	2.6	18.7	-26.9	-21.1	-0.3	-0.5	2.2	-18.9	-18.2
Market	-1.4	3.1	16.2	-9.9	-3.6					
Market - Equal-Weighted	-0.7	3.8	19.8	-11.5	-4.2					

Notes: All indices are subsets of the STOXX 600 index, they are rebalanced monthly, use data in euros and are equal-weighted. Growth includes stocks in the top third based on both their 5-year sales per share trend and their internal growth rate (the product of the 5-year average return on equity and the retention ratio); Low volatility includes stocks in the bottom quintile based on the standard deviation of their daily returns in the previous three months; Price momentum includes stocks in the top quintile based on their performance in the previous 12 months; Quality includes stocks in the top third based on both their return on invested capital and their EBIT to EV ratio (earnings before interest and taxes to enterprise value); Size includes stocks in the bottom quintile based on their market value in euros; Value includes stocks in the bottom quintile based on their price to book value ratios. The market represents the STOXX 600 index. Past performance is no guarantee of future results.
Source: Refinitiv Datastream and Invesco

Figure 7 – Model asset allocation

	Neutral	Policy Range		Allocation	Position vs Neutral	Hedged	Currency
Cash	**5%**	**0-10%**	↑	**10%**			
Cash	2.5%		↑	10%			
Gold	2.5%		↓	0%			
Bonds	**45%**	**10-80%**	↑	**51%**			
Government	30%	10-50%	↑	25%			
US	10%		↑	12%			
Europe ex-UK (Eurozone)	8%			0%			
UK	2%		↑	4%			
Japan	8%		↑	5%			
Emerging Markets	2%			4%			
Corporate IG	10%	0-20%		20%			
US Dollar	5%			10%			
Euro	2%			2%			
Sterling	1%			4%			
Japanese Yen	1%			1%			
Emerging Markets	1%			3%			
Corporate HY	5%	0-10%	↑	6%			
US Dollar	4%		↑	6%			
Euro	1%			0%			
Equities	**40%**	**20-60%**	↓	**25%**			
US	24%			14%			
Europe ex-UK	6%		↓	0%			
UK	3%		↓	3%			
Japan	3%		↓	5%			
Emerging Markets	4%		↑	4%			
Real Estate	**8%**	**0-16%**	↓	**12%**			
US	2%		↓	2%			
Europe ex-UK	2%			2%			
UK	1%		↓	0%			
Japan	2%			5%			
Emerging Markets	1%			3%			
Commodities	**2%**	**0-4%**	↓	**2%**			
Energy	1%		↓	1%			
Industrial Metals	0.3%		↓	0%			
Precious Metals	0.3%			0%			
Agriculture	0.3%			1%			
Total	**100%**			**100%**			

Currency Exposure (including effect of hedging)					
USD	49%		↑	51%	
EUR	20%		↓	4%	
GBP	7%		↓	12%	
JPY	15%			18%	
EM	8%		↑	14%	
Total	**100%**			**100%**	

Notes: This is a theoretical portfolio and is for illustrative purposes only. See the latest The Big Picture document for more details. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows indicate the direction of the most recent changes.
Source: Invesco

Figure 8 – Model allocations for Global sectors

	Neutral	Invesco	
Energy	**4.2%**	**Neutral**	↓
Basic Materials	**4.2%**	**Neutral**	
Basic Resources	2.3%	Underweight	
Chemicals	2.0%	Overweight	
Industrials	**12.4%**	**Underweight**	
Construction & Materials	1.5%	Underweight	
Industrial Goods & Services	10.9%	Underweight	
Consumer Discretionary	**14.5%**	**Underweight**	
Automobiles & Parts	2.1%	Underweight	↓
Media	1.3%	Underweight	
Retailers	5.4%	Neutral	
Travel & Leisure	1.9%	Underweight	
Consumer Products & Services	3.9%	Neutral	↑
Consumer Staples	**7.4%**	**Overweight**	
Food, Beverage & Tobacco	4.7%	Overweight	
Personal Care, Drug & Grocery Stores	2.7%	Overweight	
Healthcare	**11.0%**	**Neutral**	
Financials	**14.7%**	**Neutral**	
Banks	6.7%	Overweight	
Financial Services	4.4%	Neutral	
Insurance	3.6%	Underweight	
Real Estate	**3.9%**	**Overweight**	
Technology	**19.2%**	**Overweight**	
Telecommunications	**4.9%**	**Neutral**	
Utilities	**3.6%**	**Neutral**	↑

Notes: These are theoretical allocations which are for illustrative purposes only. They do not represent an actual portfolio and are not a recommendation of any investment or trading strategy. See the latest Strategic Sector Selector for more details.
Source: Refinitiv Datastream and Invesco

Appendix

Methodology for asset allocation, expected returns and optimal portfolios

Portfolio construction process

The optimal portfolios are theoretical and not real. We use optimisation processes to guide our allocations around "neutral" and within prescribed policy ranges based on our estimations of expected returns and using historical covariance information. This guides the allocation to global asset groups (equities, government bonds etc.), which is the most important level of decision. For the purposes of this document the optimal portfolios are constructed with a one-year horizon.

Which asset classes?

We look for investibility, size and liquidity. We have chosen to include: equities, bonds (government, corporate investment grade and corporate high-yield), REITs to represent real estate, commodities and cash (all across a range of geographies). We use cross-asset correlations to determine which decisions are the most important.

Neutral allocations and policy ranges

We use market capitalisation in USD for major benchmark indices to calculate neutral allocations. For commodities, we use industry estimates for total ETP market cap + assets under management in hedge funds + direct investments. We use an arbitrary 5% for the combination of cash and gold. We impose diversification by using policy ranges for each asset category (the range is usually symmetric around neutral).

Expected/projected returns

The process for estimating expected returns is based upon yield (except commodities, of course). After analysing how yields vary with the economic cycle, and where they are situated within historical ranges, we forecast the direction and amplitude of moves over the next year. Cash returns are calculated assuming a straight-line move in short term rates towards our targets (with, of course, no capital gain or loss). Bond returns assume a straight-line progression in yields, with capital gains/losses predicated upon constant maturity (effectively supposing constant turnover to achieve that). Forecasts of corporate investment-grade and high-yield spreads are based upon our view of the economic cycle (as are forecasts of credit losses). Coupon payments are added to give total returns. Equity and REIT returns are based on dividend growth assumptions. We calculate total returns by applying those growth assumptions and adding the forecast dividend yield. No such metrics exist for commodities; therefore, we base our projections on US CPI-adjusted real prices relative to their long-term averages and views on the economic cycle. All expected returns are first calculated in local currency and then, where necessary, converted into other currency bases using our exchange rate forecasts.

Optimising the portfolio

Using a covariance matrix based on monthly local currency total returns for the last 5 years and we run an optimisation process that maximises the Sharpe Ratio. Another version maximises Return subject to volatility not exceeding that of our Neutral Portfolio. The optimiser is based on the Markowitz model.

Currency hedging

We adopt a cautious approach when it comes to currency hedging as currency movements are notoriously difficult to accurately predict and sometimes hedging can be costly. Also, some of our asset allocation choices are based on currency forecasts. We use an amalgam of central bank rate forecasts, policy expectations and real exchange rates relative to their historical averages to predict the direction and amplitude of currency moves.

Definitions of data and benchmarks for Figure 4

Sources: we source data from Datastream unless otherwise indicated.

Cash: returns are based on a proprietary index calculated using the Intercontinental Exchange Benchmark Administration overnight LIBOR (London Interbank Offer Rate). The global rate is the average of the euro, British pound, US dollar and Japanese yen rates. The series started on 1st January 2001 with a value of 100.

Gold: London bullion market spot price in USD/troy ounce.

Government bonds: Current levels, yields and total returns use Datastream benchmark 10-year yields for the US, Eurozone, Japan and the UK, and the Bank of America Merrill Lynch government bond total return index for the World and Europe. The emerging markets yields and returns are based on the Barclays Bloomberg emerging markets sovereign US dollar bond index.

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond total return indices, except for in emerging markets where we use the Barclays Bloomberg emerging markets corporate US dollar bond index.

Corporate high yield (HY) bonds: Bank of America Merrill Lynch high yield total return indices

Equities: We use MSCI benchmark gross total return indices for all regions.

Commodities: Goldman Sachs Commodity total return indices

Real estate: FTSE EPRA/NAREIT total return indices

Currencies: Global Trade Information Services spot rates

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