**FINAL HONOUR SCHOOL ECONOMICS & MANAGEMENT 2020-21
INTERNAL EXAMINERS' REPORT**

Part I

A.   STATISTICS

(1)   Numbers and percentages in each class/category

    (a)   Classified examinations

Class		Number				Percentage (%)		
	2020-21	2019/20	2018/19	2017/18	**2020-21**	2019/20	2018/19	2017/18
I	25	39	29	(16)	28	50%	34.94%	(18.8)
II.I	63	36	51	(62)	71	46.2%	61.45%	(72.9)
II. II								
III								
Pass								
Fail								
DDH								

    (b) Unclassified examinations – none.

(2)   Vivas – none.

(3)   Marking of scripts

All scripts were double-blind-marked in the first instance. The process by which agreed marks are reached is described in the Examining Conventions.

B.   EXAMINING METHODS AND PROCEDURES

The threshold for achieving a First is 68.5, in line with the thresholds for PPE and History and Economics. 59.0 for a II.1 and 49.0 for a II.2. Particular attention was paid to candidates just below the borderlines.

Both Economics and Management used step-marking for essay questions.

C. CHANGES TO BE CONSIDERED

This year things were coming back normal and overall, we felt it went well. The board did feel that more detailed guidelines around how to handle MCs is still missing and more help would be useful.

D. COMMUNICATION WITH CANDIDATES

See: E&M Information to Candidates

Part II

GENERAL COMMENTS ON THE EXAMINATION

Examiners were generally satisfied with the standard exhibited by the candidates.

The distribution of grades in general, and of Firsts in particular, was back to the pre-covid average, as students knew well in advance the circumstances of online exams and had plenty of time to prepare. The safety net of last year was removed and largely, in terms of classifications of degrees, we were back to normal. The board felt that this was managed well and that standards were consistent with what they were before Covid and what we normally expect in Oxford.

The issue with MCs remained. The number of MCs submitted was the highest ever and we spent a lot of time classifying these and trying to pick the more severe ones. We do hope this will be less of an issue in coming years depending on whether exams go back to being in person or not, as many MCs were related to technical issues related to exams taken at colleges or home. It would be beneficial if there were more guidelines in future on how to deal with these increasing numbers of MCs.

B.   BREAKDOWN OF THE RESULTS BY GENDER

The proportion of females obtaining a First was well below that for males.

2020-21 – 89 Classified Candidates

Class	No. Males	% of males in class	No. Females	% of females in class	M+F Cands. 2020-21
I	22	32	3	14	25
2.1	46	68	17	81	63
2.2					
3rd					
Pass					
Fail					
ddh					
Totals					

Previous 3 Years' Statistics by Gender*: (Safety Net was in place for TT20)*

2019-20 – 78 Classified Candidates

Class	No. Males	% of males in class	No. Females	% of females in class	M+F Cands. 2019-20
I	29	52.7	10	43.48	39
2.1	24	43.6	12	52.18	36
2.2					
3rd					
Pass					
Fail					
ddh					
Totals					

2018-19 – 83 Classified Candidates

Class	No. Males	% of males in class	No. Females	% of females in class	M+F Cands. 2018-19
I	20	35.71%	9	33.33%	29
2.1	33	58.93%	18	66.67%	51
2.2					
3rd					
Pass					
Fail					
Totals					

2017-18 – 85 Candidates

Class	No.	% of males in class	No.	% of females in class	M+F Cands. 2017
I	12	19.0%	4	18.8%	16
2.1	46	73.0%	16	72.2%	62
2.2					
3rd					
Pass					
Fail					
Totals					

C.   DETAILED NUMBERS ON CANDIDATES' PERFORMANCE IN EACH PART OF THE EXAMINATION

This information is provided in the **Subjects Board Reports** for Economics and Management respectively.

D.   COMMENTS ON PAPERS AND INDIVIDUAL QUESTIONS

These are included in the relevant **Subjects Board Reports.**

E.   COMMENTS ON THE PERFORMANCE OF IDENTIFIABLE INDIVIDUALS / CANDIDATES WITH MITIGATING CIRCUMSTANCES

At the Final Exam Board meeting, **75** certificates relating to Mitigating Circumstances were considered in the 2021 cohort.

Candidates at borderlines were closely scrutinized by the External Examiners and the Exam Board.

F.   NAMES OF MEMBERS OF THE BOARD OF EXAMINERS
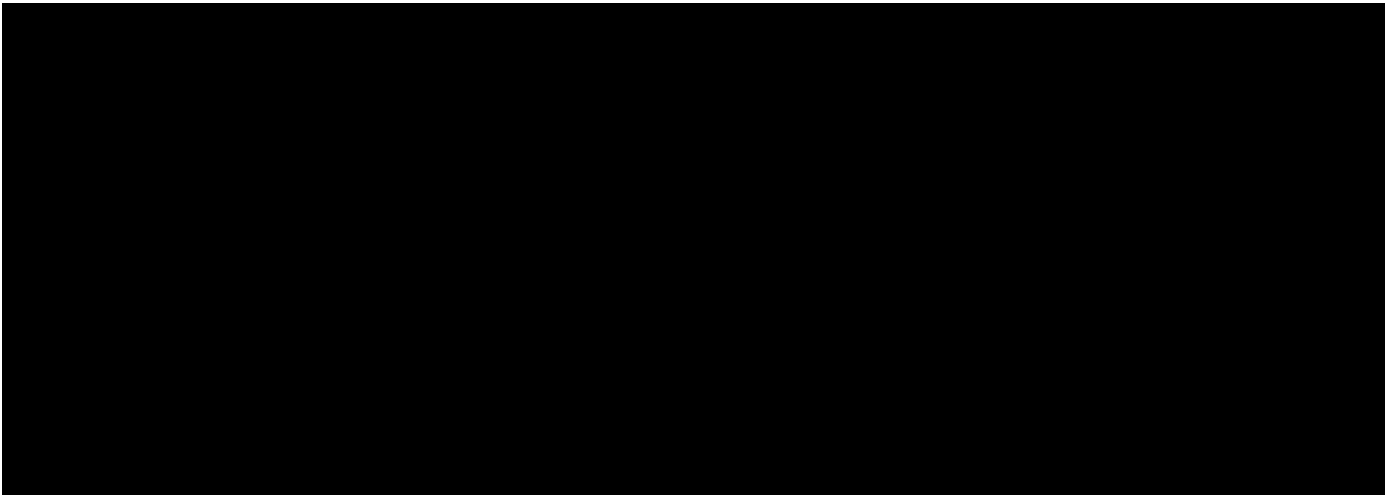
Chair, 2021 FHS E&M Classification Board

Management Subject Board Report 2020-21

This report contains four parts:

Part I: Chair's Report

Part II: Statistics

Part III: Prizes

Part IV: Reports on individual Management papers

Part I: Chair's Report

1. Background

This was the fifth year that a Management Subject Board was in operation at the behest of the Department of Economics, although the Chair this year (and next) is from the Business School. The Subject Board is responsible for setting papers, ensuring all scripts are marked and that all marks are resolved, analysing the marks, and passing the agreed marks to the Classification Boards (for each degree course). The Chair of the Subject Board is a member of every Classification Board.

2. Procedure and timing

An initial meeting of the examiners was held in January to establish the timetable and the responsibility for setting papers and liaising with the external examiners. Unlike last year, this year we knew from the start that exams will be open-book. The main meeting of the Subject Board took place in Week 10. The exams needed to be marked and the marks reconciled by the end of Week 9. All marks were processed by ▮▮▮▮▮▮▮▮▮▮▮▮▮▮ of the Economics Department.

3. Examiners

The Management Subject Board examiners were ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ ▮▮▮ ▮▮▮▮▮▮▮▮▮▮

The External Examiner was:

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

The main role of the external for the Subject Board was to comment on the draft papers.

4. Administrative resources

The Subject Board is indebted to ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮n the Examinations office of the Said Business School and also to ▮▮▮▮▮▮▮▮▮▮▮ the Undergraduate Administrator in Economics, for their remarkable efforts to deal with this tight timetable. The timetable was further exacerbated because of remote working and other impacts of covid-19. We benefited from the changes proposed last year by the then Chair ▮▮▮▮▮▮▮ and the Director of Undergraduate Studies to improve processes around paper setting and paper marking, including suggesting to paper setters that they can set papers from the beginning of Michaelmas; earlier identification of second markers; better training of new paper-setters;

reminders about the relevant EAF sections; and earlier reminders about marking deadlines (which are roughly known from the beginning of the academic year).

5. Procedure in the main meeting of the Subject Board

At its meeting on Week 10 the Management Board examined carefully the distribution of marks for each paper, considering mean, medians, standard deviations, upper and lower quartiles and the proportions within each classification band. For each option paper the average performance of those taking that paper compared to their performance on the papers was calculated and considered. At the same time the Board was aware of the distortions in aggregate statistics caused by outliers and, in some cases, by scripts of candidates with Factors Affecting Performance certificates, particularly in option papers with small numbers of candidates.

6. Summary and Recommendation

The Subject Board continues to work well for Management.

Part II: Statistics

1. Numbers of candidates taking Management papers in each degree programme

Degree Programme	Numbers of candidates taking Management
Economics and Management	89
Engineering Science	14
History and Economics	3
Philosophy, Politics, and Economics	15

2. Data on individual papers

Paper	Candidates	>= 70	>= 60	>= 50	>= 40	>= 30	< 30	upper quartile	median	lower quartile	mean mark	standard dev.
Accounting	49	14%	45%					66	62	56	61.4	7.9
Entrepreneurship and Innovation	33	70%	30%					73	72	68	71.7	4.4
Finance	69	28%	68%					70	67	64	66.5	4.3
Global Business History	10	40%	60%					73	68	65.25	69.3	5.6
Marketing	45	29%	64%					70	67	65	66.5	3.7

Organizational Behaviour and Analysis	51	20%	76%		68	65	62	66.7	5.0
Strategic Management	74	31%	68%		70	68	66	67.8	2.9
Technology and Operations Management	26	42%	58%		70	69	68	68.6	3.0
Thesis	3								

Following the guidance provided in the Assessment Support package, it was proposed that scaling be applied to the Accounting and Entrepreneurship and Innovation papers to bring the 2021 Medians to within 2 marks of the Reference Medians. The examiners agreed to add 2 marks to all of the Accounting marks bringing the Median to 64, and deduct 2 marks from all of the Entrepreneurship and Innovation marks bringing the Median to 70.

It was agreed that the Management Subject Board would inform the E&M Classification Board of this proposal, and ask them to carefully review any candidates that had their overall classification affected as a result.

Part III: Prizes

Gibbs Foundation Prizes

Best overall performance in Management

Proxime Accessit Gibbs Prize: Performance in Management

Saïd Foundation Prizes
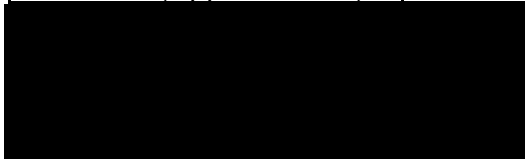
Top marks in each Management paper:

Part IV: Reports on individual Management papers

Paper: Accounting

Marks distribution for Accounting

Category of Marks	Frequency
>70% (First)	14%
60 – 69% (Upper second)	45%
███████████████████	
███████████████████	
███████████████████	
███████████████████	

Mean: 61
St. Dev: 8

Distribution of answers for Accounting (FHS):

Q. No	No. of answers
1	26
2	32
3	10
4	18
5	12
6	32
7	23
8	43

Comments on the examination of Accounting (FHS):

General comments: Please comment on the overall quality of the scripts, the distribution of marks and anything else worth noting and learning from (including suggested actions).
Students were expected to write two out of five given essays in Section A (25 marks each – 50% of the paper) and two out of three other questions in Section B (50% of the paper). The Section B questions consisted of a combination of numerical questions and discussion questions. The paper is intended to cover a wide breadth of material but there is also sufficient choice to enable students to perform their best. In general students demonstrated an excellent understanding of the material and good proficiency of the key numerical and conceptual issues. Only a small cohort were taking this course and the high marks indicate a self-selection of students genuinely interested in the material.
Comments on individual questions: Please comment on the overall quality of answers, notable weaknesses in the answers (and/or question) and anything else worth reporting and learning from (including suggested actions).
Section A: (Answer 2 out of 5 essays)

Essay 1: This year I asked students to provide a response to a strong critique of risk management (Power's argument that "risk management is an illusion"). This was a popular question, ██████████████████████████ ████████████████████████████ The tutorial questions asked students to draw on the cases assigned while discussing the literature. As the case study-based tutorial work went down particularly well during the semester, students found it easy to recall the empirics and mobilized it to support their arguments.

Essay 2: This question asked students to synthetize knowledge about the history of the balanced scorecard concept. Students did a reasonably good job – in line with the very "Oxford" nature of this question – at looking behind the veil of taken-for-granted accounting techniques and discovering the conceptual and historical origins of this accounting tool.

Essay 3: This question asked students to compare and contrast three, seemingly unrelated control tools – but "unrelated" only in the sense that they were taught separately, under separate topic-headings (variance analysis, fraud detection and risk management). Nevertheless, there are important similarities and shared concerns and logics underpinning these techniques – which students could only grasp with a deep understanding of the thread that bound the course together. In other words, this was a discerning question. A smaller number of students attempted this essay (10) and for the most part demonstrated a reasonable grasp of the issues, but they definitely struggled with it. Kudos to them!

Essay 4: The course started with the issues of climate change, and ended on it too. With this, ████████████████ accounting is not only part of the problem, but also part of the solution. This was a popular choice with students generally demonstrating a good understanding of the issues we covered (and beyond, as the best-performing students mobilized knowledge gauged from week 8 projects on sustainability accounting too). Candidates who scored less highly likely demonstrated less insight into the details of the accounting issues at hand.

Essay 5: The question asked students to demonstrate their understanding of the role of accounting in bringing about the Purposeful Company idea in the context of the prevailing (?) shareholder-value imperative. Despite the question marks drawn around the dominant institutional logic of contemporary capitalism, students felt safer on this ground (than for example, in Essay 4), as this was a recurring theme in the course – and this topic is present prominently in SBS faculty research.

Section B: (Answer 2 out of 3 questions)

Question 6: As variance analysis had been a recurring feature in previous exams, a large number of students attempted this question While previously variance analysis was discussed in its simplest form (abstracted to its bare essentials in the teaching examples used), ████████████████ variance analysis as a more applied, real-life and case-based topic ██ covered both the HBS case Software Associates, and the case of Malea Fashion District from the Davila-Oyon textbook). While in previous years, exams presented students with a well-structured, simplified manufacturing setting, ████████ set the exam to follow the level of complexity and detail discussed in class, and also to test students' ability to transfer their variance-analysis skills to a service-company setting. In the course, we worked hard to bring that context into life by discussing the Software Associates case, and carrying out Level 1-Level 4 variance analysis in that setting. The exam only asked students to perform Level 1-2 analyses, still, it seems that the depth of understanding required to master technical and

conceptual detail (pertaining to an IT- consulting setting) was a barrier to answering this question correctly (average score: 13 out of 25).

Question 7: Over 2019-2021, ▮▮▮▮▮▮▮▮ course with notions of time-based activity-based costing, and the numerical question related to costing probed students' understanding of the difference between traditional ABC and TDABC. This was a novel element in the exam (this year as well as last year), but students navigated this challenge well. While last year only 20% of students attempted this type of ABC question, this year almost half of them did (23 out of 49), which suggests that this cohort's confidence in this topic was greater (perhaps also due to their access to last year's exam). They did it well too (average score: 19 out of 25).

Question 8: A large number of students (43 out of 49) attempted this (ever-green, classic management accounting) question and for the most part were able to perform the cost-volume-profit calculations correctly and showed all workings and formulae. The discussion questions were also well attempted and answered (average score: 16 out of 25).

Paper: Entrepreneurship and Innovation

Assessors' Report, Trinity Term 2021

Marks distribution for Entrepreneurship and Innovation

Category of Marks	E&M	Engineering	Total
# students	19	14	33
>= 70	79%	57%	70%
65-70	16%	43%	27%

Mean: 71.7
St. Dev: 4.4

The Entrepreneurship and Innovation option was offered to both E&M and 4th Engineering students on the EEM pathway, with a slight majority of SBS students. This was the fifth year of the option, in which we implemented further changes to the syllabus in response to feedback from the previous years. Also, of course, the class conducted entirely online, which required some major content as well as delivery adjustments. Most significantly, we further improved support for the quantitative material offering extra revision workshops to students from this and all previous cohorts. As in previous years, we ensured that the examination questions were very explicitly linked to material from all previous years' reading lists, classroom discussions, and tutorial exercises, so that students from this and any earlier cohort could expect that their revision would prepare them optimally for the exam.

The examination posed a series of questions combining various aspects of the course: theoretical models from the lectures and readings, practical case material from the term, worked examples of financial calculations, and short essays on basic concepts of entrepreneurship and innovation. The choice of the examination questions aimed to provide students with opportunities for thinking about the challenges of conceiving, evaluating, and implementing entrepreneurial ventures. Students were able to choose from a variety of questions and question types, giving each student the chance to play to his or her strengths.

- The **least successful** answers simply recounted facts from the case and/or focused more on discussion or summary of the frameworks and theoretical ideas themselves, rather than using and applying (or even criticising) these frameworks in the context of the questions posed.
- **Stronger** answers focused on a coherent selection of essential frameworks and arguments—building on class materials and discussions—and systematically applied them to the questions asked, along with carefully considering implications for the venture's performance and the entrepreneurial mind-set of the founders and other stakeholders.

- **Good** answers demonstrated solid understanding of the material through discussion and application of the relevant models and frameworks from the module, including cases, readings, exercises, and lectures.
- The **best** answers recognized the importance of analysing and figuring out how to structure business and related activities coherently, particularly in the earliest phases of ideation, opportunity assessment, financial and business modelling, and starting up.
- The financial calculations were completed without significant errors by most students.

Some more specific remarks on each of the questions:

Q1	Good essays demonstrated an understanding of:
	- the difference between an idea and a business opportunity
	- the processed and frameworks by which opportunities can be identified and evaluated
	- make a persuasive case for customer value proposition
	- demonstrate how to efficiently test a value proposition
	SOURCES:
	Readings from Week 1, esp Block, J, Fisch, C, and van Praag, M (2016) and Drucker (1985)
	Readings from Week 2, esp Mullins, J and Komisar, R (2010), Da Rin and Hellmann (2020)
Q2	The best answers presented analysis along the following lines:
	Why is assessing feasibility important?
	- Establishing feasibility early minimises costs of failure - Stress testing an idea helps to refine eventual viability of a product/service and business model - MVP Potential limitations:
	- Data for making such assessments is subjectively gathered and interpreted - High risk of confirmation bias - Entrepreneurial passion does not always coexist easily with reasoned argument, but each is equally important
	SOURCES
	- Blank (2013) Business Model Canvas - Da Rin and Hellman's Matrix Canvas (2018);

	- the "Evaluating Opportunity" framework provided in lectures and the Mullins Feasibility Model (2013) - Essays should also cite appropriate and verifiable real-world examples
Q3	Good answers argued from published theory & observed practice, not personal preference PROS of Corporate Entrepreneurship - Minimise risk of reputational and financial failure - Incentivise entrepreneurial behaviours - Bring new skills, networks, other resources into corporation CONS of Corporate Entrepreneurship - Internal resistance to entrepreneurial activity and culture - Low incentives to appropriately skilled talent (cannot offer equity) - Exposure to high cost of expert and super-mobile labor (contracted tech/coding specialists) SOURCES: - Covin and Miles (1999) - Kirsner (2018) - Klidow (2019) - Wolpert and Lippitz (2007) - Garvin and Levesque (2006) - Shimizu (2012)
Q4	**Part A**: Good answers presented arguments like the following: - Principal/Agent conflicts can incentivise investors differently than entrepreneurs - Founders can harness these differences in incentive to further incentivise growth, but must be wary of radical misalignment - Network capital can diversify these agency risks - VCs should also bring more than just financial resources, and good ones will work to align their incentives to the founders as closely as possible. SOURCES: readings for Week 2 & 3 & 5b **Part B:** Students should have disagreed with this statement, strongly. - Over-prioritising financial incentives builds risks into ventures - Under-prioritising other forms of incentives can impoverish the venture, and disempower the founders - Power imbalances can be more destructive to ventures than slow sales, high costs, stiff competition, etc - In addition to financial returns, non-financial elements can be vital to deals and negotiations, but are much harder to quantify SOURCES: reading for Week 3 & 4 & 5b
Q5	**Parts A/B/C**: financial calculations actually carried fairly low weight for assessment.

	Arithmetic is not the point of the course, so wrong answers didn't matter much, and right ones didn't either. The point was to have material for discussing the implications of the numbers, in Parts D and E.

Part D: good answers made comments and observations like these:

Convertible preferred shares = additional downside protection (increased cash flow rights):

     - venture does well: preferred shares convert to common equity

     - venture does not perform well: investor's rights come first, receives most return

Incentivise startups by encouraging entrepreneurs to take risks. Help investors to screen out 'unsuitable' investment candidates.

Part E: good answers demonstrated the following awareness

Board of directors makes all strategic choices. Chair has the overall responsibility.

Implications of investor board chairmanship depend on the fit between investor and the startup.

     Good fit =   investor understands startups business and industry – is able to provide human, social, cultural capital

     Bad fit = investor does not understand startups business or industry – can make irrelevant information requests, hinder strategy and operational delivery |
| Q6 | **Part A**:

15,000 Net Income: 24,000 (from 7.) + 10,000 (from 3.) – 3,000 (from 3.) – 2,000 (from 6.) – 7,000 (from 7.) – 2,000 (from 8.) – 5,000 (from 9.)

+ 2,000 Depreciation: (from 8.)

– 1,000 Inventory: 3,000 (from 2.) + 8,000 (from 5.) – 3,000 (from 3.) – 7,000 (from 7.)

    – 0 Accounts Receivable: (no event)

    + 0 Accounts Payable: 3,000 (from 2.) + 5,000 (from 5.) – 3,000 (from 4.) – 5,000 (from 10.)

= 16,000 Operating CF

– 10,000 Investing CF |

	= 6,000! Free CF

Part B:

Students that calculated year-end cash balance properly ascertained the company's (projected) financial position.

Beginning cash was 50,000 from capital raised, so year-end cash balance is 56,000.

Both Parts:

Here again, the calculations were less important than the discussion. And interpretation is open-ended: some students pointed out that company appears healthy (projected to transform 50,000 into 56,000); expansionary effort thereafter might require more equity financing, but depends on second year performance, as well as impact of unforeseen circumstances in first year; etc. as long as students made a cogent argument about the company's finances, grounded in the numbers and other relevant factors, and expressed concisely, they received high marks.

SOURCES: (for Part B)

readings for Week 3b: Alemany L. & Andreoli J. (2018), Da Rin and Hellmann (2020), Berkery, D (2007) |
| Q7 | **Part A:** good answers made points like these

- regulation: can create barriers but can also seek to establish a level playing field that supports entry and fair competition
- investment in ventures, grants, tax breaks etc.
- investment in skills (education), immigration policy, e.g. Startup Chile
- investment in innovation (research)
- investment in infrastructure
- institutional stability
- global interconnections and standards

SOURCES: Readings for Week 8

Part B: good answers made arguments like the following

Different ecosystems shape different ventures. Oxford's is characterised by: |

	- The university: skills - both training and team members, mentors, network - Foundry: skill training, financing, workspace, expert mentors, network - Investors: angel and seed funding - Culture: peer support, success stories, societal norms SOURCES: any case study, and readings for Week 6 and Week 8 **Part C:** good answers demonstrated understanding of ideas like these: Start-ups benefit from the support of educational institutions, networks, funding, tax incentives, skills development, etc. - The rationale for encouraging a start-up ecosystem is to create jobs, diversify the economy, harness innovation, drive productivity, discipline the behaviour of established firms, attract other economic resources, and enhance economic and social vitality. - Any conceptual frameworks from class illustrated with details from any cases from class will be acceptable if cogently presented and argued. SOURCES: Adner (2006) "Match your innovation strategy to your innovation ecosystem", *Harvard Business Review*, April; Drucker (1985), Stevenson (1985), Block et al (2016), Economist (2014) "Tech Start-ups", Wilson (2014), Litan (2008), etc.
Q8	The best essays argued <u>against</u> this statement. As discussed in the readings for Week 5 (Bagley and Dauchy, 2012; Cohen, Nelson & Walsh, 2000) achieving formal IP protection through patenting is very resource intensive, and often impossible for an early stage start-up to achieve. Instead, start-ups should seek to protect their competitive position through other means: building brand, or loyalty, or critical mass. Additional sources worth citing included the supporting tutorial in Week 6, and any other relevant case material.

Further comments and overall statistics on next page:

Further Comments, including on Open Book Format:

In general, the examiners felt positive about the quality of the students' answers and the careful thought that they had put into preparing for the exam. It was impressive to see the best answers offering insights on the application of entrepreneurial theory to entrepreneurial practice, especially those that demonstrated an ability to wrestle with the broader issues relating to innovation, including factors such as the social context and the consequences of technical change.

As with all exams this year, the format was virtual and open book; this was also true last year, although unlike then, the lecture and tutorials had also been entirely online. The teaching team took special care to support this entirely virtual learning environment and were pleased to see generally high quality in students' answers. Without needing to memorise facts and figures and names and dates, students were able to fill their essays with improving details, and to spend more time organising and refining their answers. Also, their effort and attention could be deployed to application of concepts as opposed to memorisation or calculation—the very factors that were specified at the start of term as assessment priorities. Most students performed very well overall.

It is worth noting that this assessment method (by examination) is not appropriate for this material. When approved to do so, the teaching team will offer an alternative assessment, using methods derived from up-to-date entrepreneurship education that are more effective in stimulating entrepreneurial learning.

Paper: Finance

Marks distribution for Finance

Category of Marks	Frequency
>70% (Distinction)	28%
65 – 69% (Merit)	68%

Mean: 66.5
St. Dev: 4.3

Distribution of answers for UG Finance:

Q. No	No. of answers
1	34
2	43
3	26
4	27
5	4
6	12
7	9
8	8
9	5
10	28
11	5
12	9

Comments on the examination of UG Finance:

General comments: Please comment on the overall quality of the scripts, the distribution of marks and anything else worth noting and learning from (including suggested actions).
The overall quality of the scripts was good (mean mark 66.5%). The heterogeneity in marks was moderate, with marks ranging from 54 to 75. Papers with lower marks either provided an insufficient answer or lacked the candidate's own interpretation and research of the material. Papers with high marks demonstrated a thorough understanding of the concepts, models and empirical evidence. They also showed that the candidate was able to discuss extensions to the models that were laid out in the lectures and tutorials.
Comments on individual questions: Please comment on the overall quality of answers, notable weaknesses in the answers (and/or question) and anything else worth reporting and learning from (including suggested actions).
The distribution of questions attempted was significantly skewed, with more students answering the questions on asset pricing (q1-6, 70% of answers) than on corporate finance (q7-12). In future exams it may be useful to require students to answer at least one question from each part.

Answers were compared against a template solution with typically a 3-part argument.

Specific comments on the questions with most answers:

Q1. This question asks students to describe well-known predictors of returns over and beyond systematic risk (i.e. the exposure to the aggregate market), and to discuss their interpretation. Most students described at least two such predictors (firm characteristics such as size and book to market ratio, less often momentum). The best answers went on to describe three possible interpretations as risk factors, data snooping and behavioural biases.

Q2. By far the question with most attempts, it covered a core concept, market efficiency. Most students performed quite well in providing the definition of efficiency as well as examples pro and con, but only the best ones went on to examine the implications for the hypothetical new index mentioned in the question.

Q3. A question on the key prediction of the capital asset pricing model (CAPM), again students perform well in textbook definitions and examples. However, several struggled with assessing its implications for the hypothetical case of a stock that temporarily has higher than expected returns. This question as well as the previous one highlight significant heterogeneity in the students' ability to apply concepts to real world situations.

Q4. This question asks students to compare the CAPM to the arbitrage pricing theory (APT), mapping out the different assumptions to the different predictions. While many students correctly outlined the different predictions, several displayed some lack of clarity regarding the most important assumptions of APT.

Q5. This is a question about the dividend discount model approach to asset pricing, which required the students to discuss the predictive power of a high price to dividend ratio, both for future cash flow growth and for future returns. Students should then discuss what is observed in the data, mentioning the excess volatility puzzle, as well as the risks involved in pursuing a trading strategy based on price dividend ratios.

Q6. This question concerns the definition and testability of rational expectations of cash flows. The key point is not the absence of forecast errors, but the absence of predictable forecast errors, a point that was often discussed in class and that most students correctly mentioned here. Only the best answers went on to describe strategies to look for error predictability, based on the literature reviewed in class.

Q7. This is a question about the Modigliani-Miller capital structure invariance theorem. Some students gave very strong answers. This is a question that is different from the bulk of questions that were asked in previous years. The style is more suited to assess the students' understanding of concepts in relation to the MM theorem and their ability to incorporate a simple numerical example to answer an essay-style question. The stronger answers linked the numerical example with the interpretation and theory, while the weaker answers either did not use the numerical example or only focused on the numerical example without linking the result to the theoretical background.

Q8. This question tests students' understanding of the impact of government policy on investment and real economic activity. Students mostly confused correlation with causality. Weaker responses did not distinguish between the changes induced by tax rate reductions and tax base reductions. Stronger responses first laid out a careful conceptual framework, then built their answer around this framework while using a lot of empirical evidence.

Q9. This question sought to combine students' understanding of key concepts that we covered in the lectures on corporate finance and taxation and the application of these concepts to current economic problems. Strong answers provided an understanding of the material, but also linked the material to the novel economic setting of the question well.

Q10. This question on international portfolio investment and equity home bias was among the more popular questions. Students were inclined to provide empirical evidence on home bias straight away, without laying out a conceptual framework, and often times not even explaining what home bias is. Despite this caveat, the answers were mostly strong and demonstrated an understanding of different findings in the literature.

Q11. This is a question about international issues. Overall, the few students who chose to answer this question were extremely well-prepared and also did not write 'a generic essay on topic X'. The answers were thoughtful and addressing the specific question while providing the body of evidence/literature to back up the arguments.

Q12. This is a question about corporate governance that aimed to assess the students' knowledge of the topic and their ability to link some of the theoretical concepts to real-world examples. Some of the students provided excellent answers. The lower marks were granted to students who did not explain the connections between different models and did not explain some of the key concepts.

Marks distribution for Global Business History

Category of Marks	Frequency
>70% (First)	40%
60 – 69% (Upper second)	60%
50 – 59% (Pass)	0%
40 – 49% (Third)	0%
30 – 39% (Pass)	0%
0 – 29% (Fail)	0%

Mean: 69.3
St. Dev: 5.6

The aim of the Global Business History assignment in Economics and Management in the Final Honours School is for undergraduates to identify and research a historical case study from any period or region from around the world to be taught to fellow undergraduates. Of course, this year was extraordinary because of the difficulties related to the pandemic. This meant that undergraduates found it virtually impossible to use archival materials or to visit the locations they would normally have seen in Oxford. Despite this (and perhaps because of the structural problem), the Global Business History students were free chose to write about a wide range of cases that covered business, non-profit, and state institutions around the globe. The diversity of their perspectives in the course were reflected in the wide variety of subjects that they chose to study in their case studies. The result was a generally excellent standard of work.

It was impressive given the circumstances that their assignments were generally very good and that the very best of the case studies deployed particularly strong historical examples to demonstrate management concepts in intriguing ways. In particular, the candidates who wrote open cases – not too opinionated – that were supported by a strong teaching note that explained how to encourage a variety of opinions and viewpoints from the open questions raised by the case. In other words, a fascinating story opened up equally thoughtful questions that could both demonstrate a theoretical tool but also contrasting views among the readers. Where the cases and the notes fell down, it was often because the students didn't give enough room for divergent perspectives or theoretical lessons that went beyond the specificity of the particular historical example.

The examiners agreed that given that this paper was the first iteration of the new course, the students' performance was particularly impressive in choosing historical examples to bring context to contemporary issues. Several of these cases merit serious consideration for inclusion in the Global History of Capitalism project at Oxford. As such, it is good to see that the hard work of the students will live on beyond the end of the course itself. It is also gratifying to see so many students put in such hard work given the extraordinary circumstances of the pandemic year. They are to be warmly congratulated for doing so well in the face of adversity that everyone faced.

Marks distribution for Marketing

Category of Marks	Frequency
>70% (First)	29%
60 – 69% (Upper second)	64%

Mean: 66.5
St. Dev: 3.7

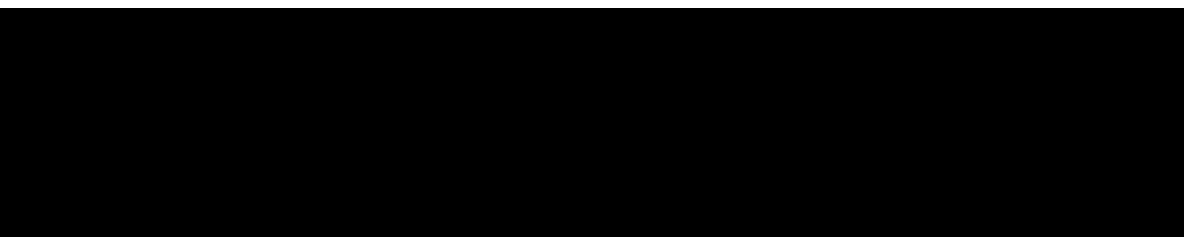*Comments on the examination of Marketing:*

General comments: Please comment on the overall quality of the scripts, the distribution of marks and anything else worth noting and learning from (including suggested actions).
In general, essays were well-organized and structured, and the quality of the finished product was generally high. In most (though not all) cases, candidates did indeed answer the questions being asked. The higher % of distinctions as compared to previous years reflects a higher proportion of answers displaying high levels of originality and creativity, including a few that were genuinely outstanding. The development of argument using literature benefited from candidates being able to reliably cite readings and lecture material. Questions 1, 9 and 12 attracted 3 or fewer responses and so no comments are provided below. Question 4 was the most popular (but not necessarily the most effectively answered) question.
Comments on individual questions: Note: if a question is answered by 3 or fewer students, then we do **not** provide feedback relating to the specific answers by those students. However, in those cases we do provide information about what the question was seeking in general terms.
Question 1 (3 or fewer responses – no feedback provided)
Question 2 (22 responses) *This question required the candidates to first describe what nudging is (likely citing Ly et al. 2014), and to come up with examples that improve consumer physical, emotional and/or financial well-being. Better answers also described how nudging can be used to enhance societal outcomes (e.g.,*

using the example or organ donation). Better answers also described the specific biases fuelling such nudges (e.g., power of the default option, the endowment effect, etc.) citing Dan Ariely (from the lecture) and/or Kahneman, Knetsch & Thaler 1991.

Question 3 (18 responses)

Candidates were expected to reflect on the five stages of the consumer decision-making process, and suggest potential marketing influence in each stage. Better answers broke these suggestions down systematically (e.g., to influence information search, marketers can influence both internal and external search). The best answers also reflected on how the consumer decision-making process itself is not always linear.

Question 4 (33 responses)

Regardless of whether the candidate argued "yes" or "no", satisfactory answers described the advantages and disadvantages of each type of segmentation. Good answers also conveyed the simplicity of demographic segmentation and the richness of psychographic segmentation. Better answers illustrate examples of each, and discussed the potential privacy concerns associated with psychographic data collection.

Question 5 (9 responses)

To answer this question satisfactorily, candidates needed to draw from the readings about brand personality (Aaker 1997), consumer-brand relationships (Fournier 1998), and/or anthropomorphism (Valenzuela & Hadi 2019). Better answers drew upon all three of these literatures and illustrated with marketplace examples. Better answers also described how brand have been affected by the rise of social media (Holt 2016).

Question 6 (28 responses)

To answer this question, candidates needed to first define customer centricity, and then describe at least two paths toward monetisation: 1) increased brand loyalty/repeat purchase from existing customers, and 2) The spread of positive word of mouth to reduce the cost of acquiring new customers. Better answers also explicitly address the different pillars of customer centricity and how each one can contribute to these paths. The best answers explicitly described how these levers influence the Customer Lifetime Value equation.

Question 7 (8 responses)

Satisfactory answers described both types of appeals, illustrated with examples, and described how emotional appeals are 1) better at getting attention; 2) more likely to be retained in memory. 3) more likely to be spread by word-of-mouth. Better answers also described how the different appeals lend themselves to different routes to persuasion (central vs peripheral), citing Petty et al. 1993. Better answers also explicitly discussed how these appeals fit in the AIDA model, and considered specific instances informational appeals might be more useful (e.g., on packaging or on the company website, etc.).

Question 8 (6 responses)

Satisfactory answers described how both data and creativity are critically important to advertising effectiveness, and explained that the two need not be mutually exclusive. Good answers should have also addressed the perceived tension between these two factors (citing Leslie 2015). Better answers gave examples of campaigns that are both data-driven and highly creative. Better answers also discussed the different objectives of campaigns (e.g., brand building vs. performance), and the risk

of over-relying on digital channels solely for the sake of metrics.

Question 9 (3 or fewer responses – no feedback provided)

[black redaction box]

Question 10 (27 responses)

Satisfactory answers mentioned: 1) the ability to segment psychographically based on big data; 2) the ability to track advertising performance in real-time, and 3) the potential power of electronic word-of-mouth. Better answers also mentioned the risks of negative word-of-mouth. Better answers explicitly cited Kumar et al. (2007) and Berger & Milkman (2011) in describing potential word-of-mouth effects. Better answers also considered privacy concerns and future trends in social media (e.g., Appel et al. 2020).

Question 11 (22 responses)

This question required candidates to be familiar with the literature on customer experience and customer journeys. Satisfactory answers described the components of the customer journey and described how improving the journey leads to firm benefits. Good answers also described how experiences are becoming increasingly important to consumers. Better answers explicitly addressed the role of data and analytics in contributing to better quality customer insight and will describe how social media has fuelled the ability to widely share one's experiences.

Question 12 (3 or fewer responses – no feedback provided)

[black redaction box]
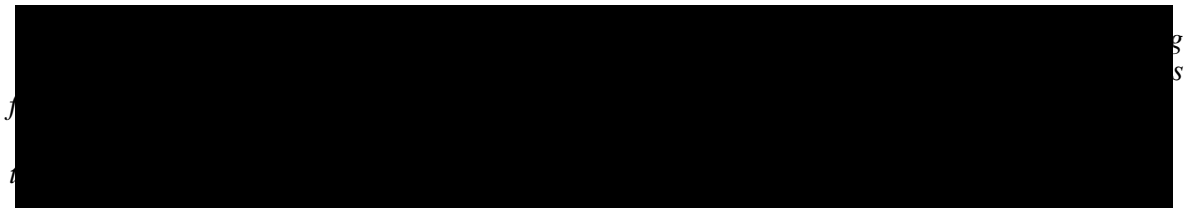
Paper: Organizational Behaviour and Analysis

Marks distribution for Organizational Behaviour and Analysis

Category of Marks	Frequency
>70% (First)	20%
60 – 69% (Upper second)	76%

Mean: 66.7
St. Dev: 5.0

Distribution of answers:

Question number		Numbers Answering
1	Transformational leadership is the only leadership approach to achieve organisational change. Discuss.	5
2	Are the theories of leadership useful for leaders in the pandemic?	29
3	How will the pandemic shape the future of work?	26
4	How do emotions impact women in ascending to the top of organisations?	12
5	How can organisations improve gender diversity?	28
6	What does the literature suggest is the best way for leaders to motivate their employees?	40
7	Power corrupts. Discuss	19
8	How do strong organisational cultures help when leading change?	22
9	How does organisational culture impact networks in organisations?	5
10	What are the challenges of leading diverse groups and teams?	7
11	Assess the strengths and weaknesses of institutional theory in explaining change in organisations.	6
12	How can leaders ensure that decisions in organisations are ethical?	5

Comments on the scripts:

General comments
Students clearly favoured specific questions, with question 6 (on motivation) being the most popular choice, with 78% of students answering this question. Questions 2, 3 and 5 were the next most popular questions, with over half of the students selecting each one of these questions. Questions 1, 9, and 12 received the lowest response. Overall, the quality of the scripts was good. We awarded a distinction to 10 students (approximately 20%).

Comments on individual questions

Most students developed competent essays, demonstrating good knowledge of the material, and covering the main perspectives, theories, concepts, and literature. For scripts given a distinction, students developed a stronger argument, often showing more complex and nuanced understanding of the phenomenon and exploring connections with other phenomena within organisational behaviour.

For example, in the question on motivation (question 6), essays that were awarded distinction went beyond describing different theories of motivation to critiquing these theories and exploring contextual factors that would impact the utility of individual motivation theories for leaders. Moreover, essays that received distinction often considered how concepts associated with team effectiveness interacted with the motivation theories they addressed.

In the question on the impact of leadership theories to lead during the pandemic (question 2), distinction was awarded when students explored the nature of the problem that the pandemic brought for leaders (e.g., the pandemic as a wicked problem, how the pandemic impact the mental health and their emotional state of followers, the challenges of leading remotely) and provided a nuanced and critical understanding of how a range of leadership theories could help leaders during the pandemic. Additionally, essays that received distinction often addressed insights that the pandemic brings to our understanding and theorizing of leadership.

Distinction in question 5 (gender diversity) was awarded for essays that went beyond listing challenges to gender diversity and potential initiatives organisations might implement, to considering how the success of a gender initiative depends on organisational level phenomenon (such as the culture of the organisation) and macro phenomenon (such as the institutional, legal, and cultural constraints that organisations face at a national level and industry levels).

Question 8 (role of strong organisational cultures on change) was a popular choice, but several students struggled developing competent essays. Weak essays often explored either the concept of organisational culture or the concept of organisational change but did not consider the interplay between a strong culture and resistances to and implementation of change (as asked by the question).

Paper: Strategic Management

Marks distribution for Strategic Management

Category of Marks	Frequency
>70% (First)	31%
60 – 69% (Upper second)	68%

Mean: 67.8
St. Dev: 2.9

Summary reflections on the paper as a whole

Overall:
Generally, students' answers demonstrated very good understanding of the issues in the questions. It can be seen by the list of literature they cited, empirical examples and analysis of existing theories. One concern is that most of the students choose the "safe" questions that they have written similar weekly essays on. Therefore, there are not many distinctly interesting essays. Another problem is that many essays are a "laundry list" of literature. Students need to be further encouraged to form their own original arguments.

Specifically:
The overall quality of the scripts was very good, with only a few papers being excellent or poor. More than in other years, answers to the most popular questions tended to be very standardised, with citations of the same key papers and presentations of the same arguments. This made it difficult to differentiate much between scripts or to assess how much students really understood the topics and were able to connect them to real-life scenarios. Obviously, the fact that this was an open-book exam played a role. There was a clear preference for descriptive rather than "creative" essays, i.e. most students showed very good knowledge of the key papers but did not venture, apart from some exceptions, on answers requiring to apply theory to practice or to make original arguments. Those that did, generally did it well and managed to get distinction.

Excellent scripts were those citing appropriately the key literature, answering in depth all the sub-questions of each question, presenting real-life examples and leveraging papers not traditionally related to that topic to support the arguments and/or original views and opinions.

Very good scripts cited all the key literature without mistakes or misunderstandings and used a few real-life examples, drawn from either the papers studied for the course or other independent sources/experience (more the former than the latter).

Good papers presented the key literature but forgot to mention one or two key points or presented minor mistakes.

Poor scripts did not answer the question directly or made arguments that were not well defended/explained or supported by concrete examples.

For next year, it might be helpful to encourage students to think more creatively, to bring to the table original examples showcasing how theories apply in practice and to dare answer questions that are not simply asking to discuss a theory and its implications, because answers to those questions tend to be very standardised and therefore not easily conducive to distinction.

Like last year students were asked to write 3 essays from a selection of 10. The questions are listed below, including the lecture material they refer to.

#	Question	Lecture Source for Model Answer
1	How would you define and measure firm performance? Discuss and illustrate with examples.	1-2
2	What are some of the pitfalls of studying industry performance over time? Discuss and illustrate with examples.	2
3	Which is more important to the long-term success of an organization: corporate or competitive strategy? Discuss and illustrate with examples.	3-4, 11-12
4	How can cooperative dynamics between firms (within or across industries) complement the positional and resource-based views of competitive strategy? Discuss and illustrate with examples.	3-6
5	Under what conditions would you suggest that a first or a second mover are more likely to achieve a competitive advantage? Discuss and illustrate with examples.	4-5, 7
6	Does firm structure follow strategy or vice versa? Discuss and illustrate with examples.	8
7	On February 12th 2021, the Korean e-commerce platform Coupang announced its Initial Public Offering on the New York Stock Exchange aiming for a valuation of approximately $50 billion. Since its inception in 2010 the company has never been profitable. Is achieving a competitive advantage necessarily associated with profitability?	1-5

8	What are some of the advantages and disadvantages of being a diversified firm? Discuss and illustrate with examples.	11
9	What effects do varying rules and regulations have on how firms act in a competitive setting? Are their strategic complementarities with the political economy? Discuss and illustrate with examples.	8-10
10	Can behavioural insights lead to better decisions in strategic management? Discuss and illustrate with examples.	15

Paper: Technology and Operations Management

Marks distribution for Technology and Operations Management

Category of Marks	Frequency
>70% (First)	42%
60 – 69% (Upper second)	58%
50 – 59% (Pass)	0%
40 – 49% (Third)	0%
30 – 39% (Pass)	0%
0 – 29% (Fail)	0%

Mean: 68.6
St. Dev: 3.0

Twenty-six students sat the paper, all online. Eleven students obtained total marks greater than 70%. The average mark was 68.6%.

As usual, the scripts that were awarded the highest marks were those where the candidate addressed the question that had been set, did not waste time with lengthy, irrelevant introductions, and was able to show insight and some original thought in their answer, demonstrating that they had actually considered the implications of that aspect of operations management in the real world. Good use of examples was another indicator of the ability to consider critically the models from the literature.

Q1 Flyvbjerg argues that for the past 70 years performance in achieving forecast outcomes of major projects has not improved. Discuss his explanations of why this is so. Illustrate your answer with examples.

15 attempts

This was one of two project management questions on the paper, the other being Q4, both of which were very popular. The best answers to this question were very good, and addressed the question centrally, summarising Flyvbjerg's arguments and providing a balanced and well-considered alternative viewpoint. The less good answers spent too much time on preliminary definitions of projects, and did not address the central issue on whether Flyvbjerg's arguments still stood, or whether there were possible alternative explanations for his findings. They tended to give a summary review of various accounts of project difficulties, but without demonstrating any confidence in developing their own insights. Many examples were cited of current and contemporary projects that were not succeeding, showing that the students had been applying the concepts from the course to current affairs.

Q2 It is proposed that a settlement be constructed on Mars. What technologies might be required to bring this about?

4 attempts

This question was answered well, with some outstanding answers. The best answers considered the journey to Mars as well as the technologies that could be used to create and maintain living quarters and supplies of food, water and oxygen. A broad range of technologies were cited, such as AI, 3D printing, autonomous operations, and sensors. Good answers showed how a range of technologies could be integrated and applied in a practical situation, including consideration of the astronauts' health and psychological well-being, and growing food. There was even a proposal to establish a currency and a trading economy with Earth.

Q3 An advanced European country is suffering from a pandemic disease and is deciding how to prioritise the delivery of a novel vaccine to groups of people. [contd.]

5 attempts

This question had a good spread of answers with the best answers showing good insight on the tensions between the objectives of the question and the circumstances of each nation. Alignment of the objectives could be achieved in some circumstances. The best answers also considered the supplementary exercises that would need to be undertaken to develop or update the information infrastructure of the countries considered in the question. Good answers considered the impact on the different interest groups, leading to recommendations on what should be the appropriate vaccination strategy. Some answers did not pay enough attention to analysing the risks of the various strategies. Less good answers launched into irrelevant discussions, such as the nature of Total Quality Management.

Q4 An experienced private sector project manager is planning to take up a post running a major programme in the public sector. How would you advise her on the challenges and risks she is likely to face in this new role?

18 attempts

This was another popular question, with 10 candidates attempting both Q1 and Q4. There was some evidence of overlap between the two answers.
The best answers addressed the question centrally, drawing out the differences between the public sector and private sector projects. The differences could involve the scale and ambition of the projects, the lengthy timescale with the associated political risk of policy change, higher levels of press scrutiny, and the socio-political complexity.

Weaker answers spent too long repeating preliminary definitions of projects and discussed the problems that beset projects without identifying whether they are more or less relevant to public or private projects. They included a general discussion on the skills of project managers, but without discussing whether they were more or less relevant in the public or private sector.

Q5 Service providers may be grouped as Professional services, Service Shops and Mass Services. Explain the basis for this categorisation. Locate the following services on the product-process diagram, and explain how they might use changes in operational practices to improve their efficiency and service customisation. Is it possible to improve both at the same time?

- **A personal tutor for high school students**
- **A cook-at-home menu-box service**

- **A dental clinic**

5 attempts

Candidates produced different answers for where the three services should be located on the product-process diagram, providing plausible explanations for their decisions. Strong answers suggested ways in which the services could move through the diagram to improve efficiency and customisation. The best answers included discussion on resilience and as to whether this was more relevant nowadays than efficiency, and suggested various ways to improve efficiency and customisation. Weaker answers had little discussion on whether both efficiency and customisation could be achieved at the same time, but instead strayed into discussion of total quality and ERP.

Q6

    (a) **Map the process of ordering a restaurant meal from a food delivery service. Consider the role of the customer, the delivery rider and the restaurant. [contd.]**

   ]

4 attempts

Some of the attempts to sketch the process map were very perfunctory, and did not extend to considering the decisions and handovers between the different parties in any detail. Other information that could be added to the map could have included swimlanes, timings for the various stages, and the resources that would have been needed at each stage. The answers on the back-room functions were good, covering the analysis of the process that would need to be done, and the requirements for on-line ordering, menu options, offers and updates that would be typically expected by users.

Q7 What are the advantages and disadvantages of an assembly line over fixed position manufacture? Compare the decision for automotive and aircraft manufacturers. Consider any other industries you consider relevant.

3 attempts
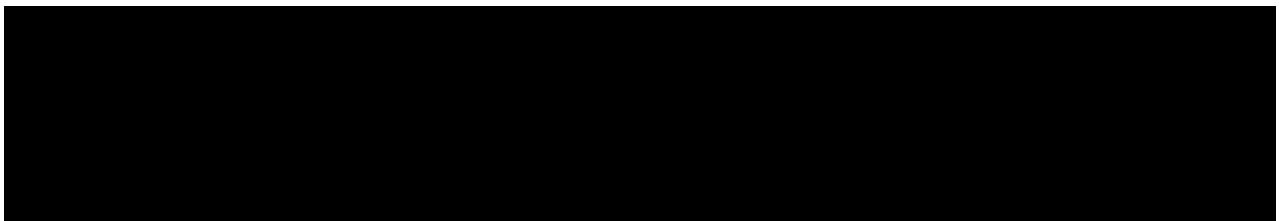
Q8 The library of an ancient university has outgrown its location in the city centre and 20% of the stock of books will have to be moved to a new purpose-built location 40km distant. A project is being planned to manage the re-location of the books. [contd]

6 attempts

The best answers didn't waste too much time on definitions of the Iron Triangle, and moved to consider other ways to assess the success of such a project, than just time and cost alone. Several people mentioned the practical issues of identifying which 20% of the bookstock should be re-located. Many candidates spotted that damage in preparation and packing and then in transit could be a considerable risk, as well creating opportunities for theft. Measures of the quality of service, after installation in the new facility, focussed on the needs of students, not unreasonably, overlooking the needs of researchers.

Q9 The standardisation of parts and processes has been very important in enabling the development of the moving assembly line. How can this be integrated with the desire for continuous improvement? How can it be encouraged?

3 attempts
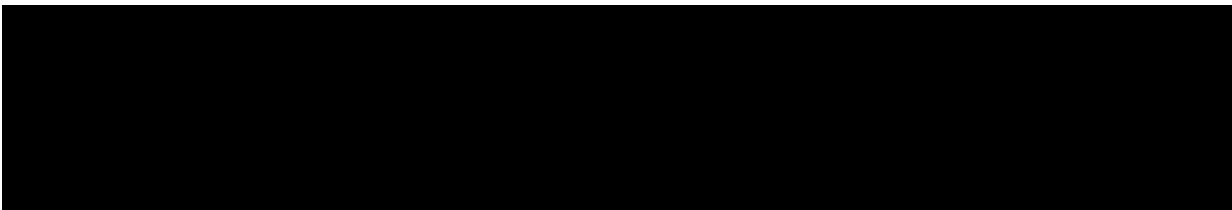
Q10 Traditional manufacturing companies in the engineering sector, such as automotive and aerospace, are facing challenges in adopting a servitization business model. What advice could you offer a company that wishes to adopt a servitization strategy?

9 attempts

The best answers focussed on the importance of relationships in the new servitization model, including the post-purchase relationship of the buyer and supplier. The best answers developed and discussed several interesting and insightful aspects of the servitized relationship, drawing several recent real-world examples, and illustrated well with discussion based on the literature.

Q11 Consider a complex supply network serving a JIT assembly plant, such as that of Toyota, according to Kito, Brintrup, New et al (2014). What would be the impact of this supply network structure on inventory management and pull vs push systems?

12 attempts

As usual, the best answers addressed the question, and the weaker ones wrote some paragraphs on adjacent topics without showing depth insight. The better answers considered the practical challenges of dealing with suppliers who have to supply many customers, rather than the small number directly above them in the usual hierarchical, pyramidal model. The network structure can lead to some key organisations having a significant role in the stability of the entire network, yet despite this, Toyota still manages to run a lean supply chain.

Q12 Modern mass production is delivering goods that are cheaper and of a better quality than ever before. What is the role in the future for Mass Customisation? What are the limits of its applicability?

21 attempts

This question was surprisingly popular, with many good quality answers. The best answers addressed

the challenges that face mass customisation, while reviewing improvements that have been made in industries that provide personalise products, such as healthcare. Many candidates drew on the connection between MC and Big Data, to anticipate customers' needs. The best answers made good use of the literature, and illustrated the argument with current examples. Good answers looked forward to future collaborations between the manufacturers and creative customers.

Although most students considered the role of mass customisation, there was little discussion of the improvements in mass production, which have perhaps had a role in developing cheap, high-variety, readily available products, so that mass customisation is not what the customer needs.

**Economics Subject Board for Final Honour Schools
Report 2021**

Part I

STATISTICS

A.

(1)   Numbers and percentages in each class/category

Such statistics are included in the reports for the PPE, E&M and H&E Classification Boards. The table below gives the numbers of candidates taking Economics for the various FHS's.

FHS	2021	2020	2019
PPE	160	173	145
Economics & Management	89	78	84
History & Economics	14	17	12

(2)   Vivas are not used.

(3)   All scripts were double blind-marked. The submissions for *Behavioural & Experimental Economics* were also double blind-marked.

NEW EXAMINING METHODS AND PROCEDURES

B.

All 2021 exams were conducted as open-book exams. Convenors and paper setters were reminded to tailor their exam papers to an open-book format. Questions that required definitions or explanations that could be found in lecture handouts (or other readily available source material) were used much less than in the closed-book exams from before 2020.

A number of assessors observed that the option to type answers, which led to the opportunity for candidates to review and revise their work, made for more concise and better structured answers. Typed answers also avoid scripts with difficult-to-read handwriting.
All exams were run on Inspera, using the mixed mode, i.e., students could type into the website and/or upload their answers as pdf files.

C.

Economics exams in 2022 will again be in the open book format, to mirror the format of the collections that students have sat as preparation. We are aware that Politics and Philosophy exams will be in person leading to PPE students having to use two different exam formats. At the same time, Management exams will be online, so if Economics switched to in-person

exams, then E&M students would face the same issue. We will put guidance in place to prepare students for this aspect of the exams.

We will switch to Inspera's "upload only" format, i.e., students will write their answers in their own editor, or by hand, and upload answers as pdf files.

D.

The Economics Subject Board Exam Conventions were slightly updated building on the lessons learned from the exams 2020. They were circulated to students, as well as being published on the Economics WebLearn site, together with all further information circulated from the Chair.

Part II

A.   GENERAL COMMENTS ON THE EXAMINATION

1. Background

This is the fifth year of the Economics Subject Board, and it is now established for all three joint honour schools that include Economics, namely PPE, Economics & Management, and History & Economics. The Chair of the Subject Board is a member of each Classification Board that has Economics subjects as part of its Final Honour School.

2. Main meeting of the Subject Board

All examiners' meetings were held online. The chair & deputy chair had an online meeting the day prior to the main meeting to analyse the marks and prepare for that meeting.

Summary statistics for each subject were presented, showing the percentage of marks in each class, the quartiles, the mean & standard deviation of the marks, and the mean mark of those candidates taking that subject relative to their marks in the core subjects.

3. Performance

The overall marks distribution was similar to previous years and we couldn't find any clear trends. We compared each paper's marks to the marks of previous years and, after discussing one paper (Microeconomic Analysis) in more detail, we decided that no rescaling was necessary.

4. Summary and Recommendation

The Subject Board worked well. Responsibilities are clear, and there is consistency of treatment of Economics candidates across degree programmes.

We had a few teething problems using the Inspera system, many of which Inspera could fix during the exam season.

Suggestions for next year:

- Only few of the markers used Inspera's marking functions, as the vast majority of markers preferred to mark the scripts offline, after downloading them as pdf files. For next year, Inspera's download function could be improved to make this procedure easier for markers. This year, for example, we used our own Python scripts to combine pdf files by candidate.
- Many students submitted their answers, or part of their answers, late, after the end of the respective exam. For next year, it would be good to standardize this late submission process, in particular for the exams that take place shortly before the marking deadline.
- It would be good to give stronger guidance to students that the technical time can only be used for uploading answers and similar tasks but not for continuing to write answers.

B.   EQUALITY AND DIVERSITY ISSUES AND BREAKDOWN OF THE RESULTS BY GENDER

Statistics on gender etc. are included in the reports for the Classification Boards (PPE, E&M and H&E).

C.   DETAILED NUMBERS ON CANDIDATES' PERFORMANCE IN EACH PART OF THE EXAMINATION

Statistics by Subject

Subject	N	70-100	60-69	50-59	40-49	0-39	upper quartile	median	lower quartile	mean mark
Quantitative Economics	191	27%	45%				70	65	58	64.0
Macroeconomics	227	21%	63%				69	65	62	64.7
Microeconomics	253	33%	45%				70	65	60	65.2
Behavioural & Experimental	15	13%	87%				69	68	65	67.3
Dev of World Economy	67	18%	81%				68	66	65	66.4
Developing Countries	14	29%	71%				69	65	63	66.1
Econometrics	53	43%	32%				76	67	60	65.5
Game Theory	48	46%	29%				75	68	60	66.9
Economics of Industry	32	34%	59%				70	67	65	67.3
International Economics	12	33%	58%				71	68	65	67.2
Labour & Inequality	12	25%	50%				69	65	60	64.8
Microeconomic Analysis	27	33%	44%				73	68	61	65.8
Money & Banking	41	15%	80%				68	66	63	65.3
Public Economics	30	23%	70%				69	66	64	66.4
Envionmental.Economics & Climate Change	17	35%	53%				70	68	66	67.1
Thesis	1									

D. COMMENTS ON PAPERS AND INDIVIDUAL QUESTIONS

Quantitative Economics

Part A

Q1. Parts (a) and (b) were both done very well; (c) contained an error (a missing negative sign from the exponent on the sample size) and was excluded from the calculation of the total mark for Part A.

Q2. Most answers correctly recognised the need to use non-standard (ADF) critical values, but some were deduced marks for failing to carry out a one-sided test. Some failed to recognise that spurious regression can only arise when both series are I(1).

Q3. Part (a)(ii) proved surprisingly difficult, even though it is merely a matter of averaging over marginal effects of the form obtained in (i). Some marks were lost for failing to perform a joint hypothesis test, comparing models [1] and [3], in part (b).

Part B

Q4. In part (c), many fell into the trap of conducting an independent two-sample hypothesis test for Study 2. This is appropriate for Study 1, but not for Study 2, since in the latter the 2009 and 2011 observations need not be independent of each other.

Q5. In part (c), few distinguished between instrument relevance, and the more stringent (and important) requirement that the instrument should not be weak, in order for the usual inferences to be valid. In part (d), some argued that there must be a typo in the standard errors for OLS and 2SLS, because these differ by two orders of magnitude: but such a result is entirely consistent with a weak instrument. An excellent answer to part (e)(ii) would have referred to heterogeneous causal effects and the weighted average of these estimated by 2SLS (i.e. the LATE), but very few students managed this.

Q6. This was answered by relatively few students, but those who did attempt it generally scored very high marks. In part (d)(ii), most graphed a shape consistent with higher dispersion at higher levels of X, but many incorrectly argued that the spread would increase quadratically in X, when it would in fact increase linearly, since the conditional standard deviation is linear in X. Part (g) was the most challenging part, and only a few answered this successfully, despite having correctly solved part (b), from which the answer (at least when u is observed) follows almost immediately.

Q7. While it was entirely possible to give a solid First Class answer to this question using only material from QE, some of the strongest responses to this question drew on empirical examples from the Labour and Public Economics courses.

Q8. Marks for this question were widely dispersed, with some students scoring exceptionally high marks. Some of the lowest marks were received by candidates who clearly did not understand the basic properties of conditional expectations, which made it impossible for them to make any progress beyond part (b) of the question. A surprisingly high proportion of candidates were deducted marks for failing to acknowledge the role of independence in parts (b) and (e).

Q9. On the whole, this question was done quite poorly. Many failed to give exhaustive answers to parts (a) and (d), i.e. to identify all of the models relevant to those questions. Very few correct answers were given to part (c).

Macroeconomics

The questions in section A were all compulsory. In section B candidates had to select two questions from a choice of five – all five questions attracted a reasonable number of responses and questions 4 (examples of time inconsistency) and 6 (income convergence in growth models) were the most popular.

The strengths and weaknesses of candidates' answers on a question by question basis are discussed in the remainder of this report.

<u>**Section A (short answer questions)**</u>

Question 1 (monetary policy response to a labour supply shock). For the first part most candidates successfully showed that inflation fell below the target before recovering once the effects of stabilising monetary policy took effect. Some candidates shifted the VPC but not PC and therefore incorrectly argued that inflation rose following the expansionary supply shock. The second and third parts were good discriminators. The best candidates deduced that under incorrect central bank beliefs inflation would fall further in period t+1 as the policy authority targeted a point on the original MR line. Good answers to part three discussed the ambiguous effects of the alpha parameter on the size of the inflation deviation from target in t+1.

Question 2 (impact of higher population growth in the Solow model). The first part asked students to explain the impact of a rise in population growth on the log level of output per capita. Almost all candidates correctly showed the capital thinning effects of the change in the intensive form diagram, but then ignored the information that technology growth (and hence per capita income growth) was 2% at both the initial and final steady-state. For the second part good candidates explained that the increase in population growth reduced the consumption maximising level of capital per capita and provided the relevant intuition. Some candidates treated the question as asking about the savings rate that would maximise consumption per capita and therefore missed the point.

Question 3 (inter-temporal consumption and fiscal policy). This question was answered poorly for the most part. The best candidates noted that due to the fact there was no uncertainty, consumption would be constant in expectation even without the quadratic utility assumption, and then used the formula for the sum to infinity of a geometric series to derive a consumption solution from the budget constraint. Very few candidates provided the technical analysis required for the second and third parts. Credit was given to candidates who asserted that higher levels of government spending and initial debt would reduce consumption (part (ii)), and that Ricardian Equivalence failed when the government is able to borrow at a lower interest rate than the private sector (part (iii)), and provided appropriate intuition.

<u>**Section B (essay questions)**</u>

Question 4 (examples of time inconsistency and price path targets). This was a very popular question and was generally well answered. Candidates presented examples of the time inconsistency problem based around either inflation bias, stabilisation bias or the commitment to irresponsibility (and often more than one example was used). The best candidates paid attention to the instruction to discuss the relevance of the examples of time inconsistent policies. A common argument was that rational expectations in some part of the private sector is assumed in all of the examples, but this assumption may not be tenable for certain sectors of the economy such as the household sector. The final part of the essay title asked what justifications there may be for price path targets if it is assumed that addressing time inconsistency is not one of them. For this, candidates provided good discussions of the pros and cons of price path targets as an objective for monetary policy decision makers.

Question 5 (fiscal expansion in an open economy with a fixed exchange rate). In response to the first part of the question, most candidates explained that in equilibrium an open economy with a fixed exchange rate has an inflation rate equal to the world inflation rate. Most candidates were then able to explain the impact of a fiscal expansion in such a setting, which is to first raise output and then inflation, with the accompanying real exchange rate appreciation both reducing demand and boosting supply through raising the consumer real wage, so that at the medium-run equilibrium output is higher. Only the best candidates explained that greater openness to trade means a flatter AD and a flatter ERU so that excess demand and hence inflation is squeezed out of the system more rapidly.

Question 6 (explaining the magnitude and persistence of income differences using growth models). Almost all candidates started with the Solow model and noted that even with conditional convergence predictions the model generates differences in living standards that are too small, and dissipate too quickly, relative to what is seen in the data. Candidates then considered other models such as those with endogenous technical change due to Romer and Jones, and the leader-follower model of international technology transfer. The best candidates realised that the Acemoglu model of directed technical change could be used to argue that skill-biased technical change may have widened the gap between rich and poor nations.

Question 7 (temporary tax change in an RBC model). Most candidates were able to present some elements of the basic RBC model and then argue that a temporary tax rise would reduce consumption and labour effort, with a knock-on effect on the capital stock. The best answers extended the Euler equations of the model to show formally that consumption and labour supply choices depend on the ratio of tax rates in periods t and t+1, and noted cases in which substitution effects needed to dominate income effects in order to generate the results asserted in the question.

Question 9 (fiscal policy responses to the coronavirus pandemic). This question elicited some good answers. Candidates were on the whole supportive of the fiscal expansions undertaken. Credit was given for a clear account of the foundations of the tax smoothing result that justifies raising public debt (the shock must be temporary and the costs from tax distortions convex), and for discussion of the reference to private sector credit constraints in the question. In terms of the criticisms of the expansion of fiscal policy, candidates were generally clear on the conditions under which debt rations would explode, and provided some interesting perspectives on whether government debt can be considered a burden on future generations.

Microeconomics

252 candidates sat the paper: 150 PPE candidates, 88 EM candidates, and 14 HECO candidates.

As in previous years, Part A accounted for 40% of the total weighting, with all questions being compulsory. In this year, Part A was composed four questions of equal weights. The topics covered in these questions were:

Question 1: Welfare Economics (Welfare theorems for general equilibrium, social welfare functions)

Question 2: Externalities (Positive externalities, bargaining and optimality)

Question 3: Applied Game Theory (Bertrand Competition in a duopoly, Bertrand-Nash Equilibrium, Cost Heterogeneity)

Question 4: Information Economics (Principal-Agent, reservation utility, optimal contract with and without effort observability)

Question 1 contained a typo regarding one of the subparts, so the 5 marks corresponding to it were granted to all students. With this in mind, the average mark obtained, slightly above the average mark of the exam and a reasonably shaped distribution of marks suggest that the problem was in line with standards.

Despite the apparent simplicity of Question 2, this brought the worst results among the Part A questions, although the high variance observed suggests that good students were solving it without any difficulty. The problem presented a small complexity in which the production function used hours of work as a (linear) input, and the information provided was the cost of an hour of work. Despite the immediate computation of the cost function of the problems, many students had difficulties with this probably due to a mental shortcut instead of writing down the information and (trivial) computation.

Despite some apparent complexity (due to the corner solutions required), the formulation of Question 3 after feedback from examiners seem to have produced an adequate distribution of marks and reasonably positive results.

Question 4 was fairly standard, reproducing questions already presented in the problem set. As a minor twist, students were required to understand and calculate the reservation utility (an issue that is never present in problem sets), and they seem to show a solid understanding. Overall, students obtained the highest marks in this question.

The average marks of Part A were slightly above but fully aligned with the average marks in the exam.

As in previous years, Part B accounted for 60% of the total weighting, with the opportunity to select 2 out of 6 questions. As in previous years, 5 of the proposed questions were of an essay-format, while the sixth one involving more practical/technical work. We briefly describe the questions, and give some insights on whether they were attempted and how they were solved

Question 5: Single-Peaked Preferences. The question required from the students to cover the theory by using some personally chosen example of a choice mechanism that could be used in a small rural community. That twist prevented purely mechanical answers in which

the theory is used without a specific context. Most students showed understanding by selecting appropriately an example and using it in their responses. 20% of students aimed to answer this question, with reasonable results.

Question 6: Public Goods. The question presented the students a specific situation (A Covid-19 app), requiring from them to use their theoretical understanding of public goods at a very applied level. This obviously prevented very much a straightforward essay writing. 25% of students attempted the question, with reasonable results (a few particularly poor answers were observed, lowering slightly the average mark, but the distribution of non-outliers seems adequate).

Question 7: Game Theory. The question required students to discuss whether rationality can be used as a justification for the use of NE as a predictor. The question departed from standard questions in the problem set in a sufficient way, but a subset of students seemed not to get the twist and reproduce an essay that they probably worked during their studies. Namely, whether NE is a good predictor. A reasonably large number of students understood the differences and presented a well-constructed essay, and a set of good students provided very well-thought answers. That made the average in line with all the other questions. 25-30% of students attempted the question.

Question 8: Risk and Expected Utility. The question required from students to present the theory of expected utility and the measurement of risk from the point of view of utility functions, concluding with an applied question on insurance and elite sport professionals. This avoided a straightforward essay rewriting from students. 30% of students attempted the question, with an adequate distribution of results.

Question 9: Educational Signalling. The question was probably the most standard, though after the comments by examiners, a twist was introduced in which the two possible equilibria were presented as two countries with different equilibria. The twist seemed to produce no change with respect to standard theoretical answers. Students merely reproduced the theory in most of the cases. A very high proportion of students (45%) selected this question, maybe because it provided many of them a less time-demanding or reflection-demanding essay that complemented the rest of their exams. With the results in mind, marks were reasonable, but maybe the open-book format is not the ideal for such a type of question.

Upon reflection, questions 5 to 8 provided sufficiently rich twists, while question 9 may not. This suggests that the open-book format does not require a complete reformulation of essays, but simply a slightly well-considered presentation of the question from a relatively different, specific angle, that can be either applied or theoretical. This limits a pure reproduction of past essays or, as in case of question 7, separates very well students who understood the question and devoted time to construct their answer by pondering, reshaping and organising adequately the important pieces of theory.

Question 10: Risk and Expected Utility. The question was technically simple, though departing from standard exercises in the problem set as it offered three different lotteries as options to consider by a decision-maker (most problems deal with one default amount of wealth and one alternative lottery). This made the problem completely new, but suitable for direct application of simple concepts. 40-45% of students aimed this question, and students seemed to obtain good results in general, showing a good understanding the concepts, and providing slightly above average to that of the exam.

Overall, the exam average across all students was 65 marks, with a standard deviation of 8 marks. 83 students obtained a first, 114 a 2.1, and 55 a mark below. The average

disagreement between the two markers of each script was 4 marks, which seems reasonable.

Behavioural and Experimental Economics

The overall quality of submitted essay was very good. The best essays combined an interesting and important research question with a well-thought out design that was able to answer the research question. The very best essays used a theoretical model to develop the experimental design and to derive testable implications. Variation of marks within group were mostly due to how well the question, design and results were explained, how well the study was linked to the existing literature and how well (if at all) a theoretical model was set up and explained.

Development of the World Economy since 1800

Development of the World Economic since 1800 The paper was taken by 67 candidates. Candidates required to answer 3 questions from 8. The average mark overall was 66, reflecting the generally high standard of the answers. The very best essays mimicked the papers we read: a clear thesis statement in the first paragraph followed by convincing support for the thesis statement using the assigned readings in the remainder of the essay.

Question 1 on the long-run effects of historical events was answered by 8 candidates. ██████████████████████████ an exceptional grasp of the issues.

Question 2 on the Ottoman Empire was answered by 33 students. Seven answers were outstanding.

Question 3 on geography and Europe's rise was answered by 54 students. As this was a popular question there was more variability in the quality of the answers.

Question 4 on Michalopoulos and Papaioannou's mita paper was answered by 29 students. There were a few impressive answers which showed a deep understanding of this paper.

Question 5 on Europe's rise was answered by 39 candidates.

Question 6 on convergence clubs was answered by 21 candidates. Five candidates provided a first class answer.

Question 7 on the transmission of the central European panic was answered by 8 students one of which provided an exceptional answer.

Question 8 on economic policy and the labour market was attempted by 8 candidates. There were no first-class answers.

Economics of Developing Countries

This was an unusual year in many ways. For this paper in particular: Only 14 candidates took the final exam – this is less than half the number in any of the previous 5 years. Hence the examiners are reluctant to read too much into the performance on this year's exam. Still, the examiners were pleased to see that the generally high quality of answers, and the subsequent distribution of marks, was very similar to that on previous years' exams.

Due to the pandemic, the exam continued with the online and open-book format that was adopted for other FHS exams. The majority of marks were in the 2.1 range, with the mean and median of about 66 and about 65, respectively, only slightly lower than last year. 4 candidates were awarded a mark of 70 or more, while the other 10 received a mark in the 2.1 range. The highest mark was 76.

We were pleased to see that all the questions on the exam were attempted by at least a few candidates. The most 'popular' question, number 6, on the returns to schooling in developing countries, was answered by 10 candidates, while at the opposite extreme, only 2 candidates attempted question 8, on the political economy of policy-making in developing countries. Somewhat surprisingly, answers to question 3, on globalization and labour conditions in developing countries, were the weakest, and received the lowest marks on average. At the other extreme, question 8 attracted the highest marks on average, albeit with a sample size of only two answers. Nevertheless, there was not a large variation in marks across questions, with most questions attracting average marks in the mid-2.1 range. As in previous years, the weaker answers were too generic, and spent an unnecessarily long time discussing issues that might have been related to the topic of the question, but were peripheral to the question. Stronger answers were more focused and addressed the specific question that was asked. As mentioned in last year's report, there was one small but noticeable difference between the answers on this open-book exam, as compared to previous years' closed-book exams: while most answers were strong on facts and arguments, the best ones distinguished themselves in the way that they marshalled those facts and arguments to make a coherent assessment.

As these marks suggest, the examiners were pleased that the vast majority of candidates demonstrated a good knowledge of the material, and their answers reflected their strong grounding in economic theory and understanding of empirical methods.

Econometrics

A total of 53 students took the exam.

Mean 65.5, median 67, standard deviation 13.2.

Questions 1 and 4 in Part A and Questions 5 and 6 in Part B were the most popular choices.

31 students answered this question. The quality of the answers varied greatly. Some scripts had very thorough and neat derivations, while others were less methodical. Only few students got part (d) correct but most answers were in the right direction.

Only 13 students answered this question. Parts (a) and (b) were very satisfactorily answered by most students. Part (c) varied in quality but it was high overall. In part (d), very few students pointed that the distribution of the F statistic diverges under the alternative hypothesis, so we would reject the null asymptotically.

24 students answered this question. In general, the answers to this question were of a good standard. Comparing the variances in part (d) was less well executed though.

38 students answered this question. Answers to parts (a) and (b) were good. The derivation of the matrix of second derivatives was less well systematically derived but overall answers to part (c) were adequate. Very few students answered part (d) satisfactorily. Some students used the right approach when answering part (d) but did not find the final answer.

36 students answered this question. Answers were generally good. Some students did not account for the autocorrelation present in the moving average process when computing the variance of the sample mean.

31 students answered this question. The answers to this question were generally of good quality.

Only 11 students answered this question. Answers to parts (a) and (b) were good. In part (c), almost all students derived the correct expectation. However, the derivation of the variance was less precise. Nonetheless, some students derived it very meticulously. Answers to parts (d) and (e) varied greatly in quality.

28 students answered this question. Answers to parts (a) and (c) were, generally, very good. Answers to part (b) varied in quality but the approach to this questions was the correct one in general. Answers to part (d) were less effective. Only few students defined cointegration in the context of the question (both yt and xt are I(1); but a linear combination is I(0)) and tried to assess whether these conditions hold.

Game Theory

Candidates were asked to answer four out of six questions with certain restrictions: at least one question from each part of the exam corresponding to general solution techniques and applications, respectively. The questions concerned problem-solving as in previous years, which was suitable for the open-book nature of the exam. The distribution of marks was similar to that in previous years.

Q1. Almost all candidates answered this question (47 out of 48), to a generally high standard. Some candidates lost marks for not providing sufficient explanation in parts b, d, and e. Part e was the most challenging part of the question.

Q2. About a quarter of candidates answered this question (13 out of 48). Candidates tended to either do really well or not well at all. Part d appeared to be the hardest to solve.

Q3. 39 candidates attempted but the average standard was not high. Some candidates failed to properly specify beliefs in pooling equilibria and could not work out part d.

Q4. Very few candidates attempted it (only 6), unfortunately none solved it very well. The question was technically straightforward but required careful thinking.

Q5. 44 out of 48 candidates attempted this question and on average did very well. The question was similar to problems presented in lectures and seen in problem sets.

Q6. 43 candidates attempted to a reasonably high standard. The question combined two topics (bargaining and repeated games), but those who were familiar with both did well. The most common weakness was to provide insufficient explanation in part e.

Economics of Industry

Thirty-two candidates took the paper of which 10 were PPE, 22 E&M and none were HE. The average mark was 67 and the standard deviation was 4. We had 11 first class answers (those 70 or over) ██
███. There were relatively few very weak answers this year. As a general rule, the stronger candidates showed signs of reading papers from the reading list, including empirical studies where asked for, rather than simply repeating from lectures.

Question 1 was the most popular, attracting 26 answers. Well answered on the whole, but students struggled most with parts b and c, not always realising that market shares do not have to be symmetric.

Question 2 was also rather popular, attracting 23 answers. Candidates generally had good knowledge of the Fudenberg and Tirole taxonomy but found parts b) and c) harder. In part (b) relevant studies included Ghemewat (1984) and Lieberman (1987). Goolsbee and Syverson (2006), also on reading list, was less relevant; few referred to Kidalyi (1996), as mentioned in Belleflamme and Peitz.

Question 3 attracted 17 answers. This was well answered. Better answers explained their answer rather than just stating it. Not many students understood the role of best response asymmetry in d).

Question 4 attracted a total of 12 answers. Answers to this question tended to be less clearly structured than others. Some students missed that the Dasgupta Stiglitz model was relevant for part b.

Question 5, which attracted 6 answers, was the least popular. Good answers noted that RPM was a useful commitment device that can overcome the opportunism problem in part b and is therefore detrimental to welfare.

Question 6 attracted a total of 12 answers. Some candidates failed to derive the relationship between HHI and the industry profit-to-sales ratio in part b.

International Economics

The International Economics paper consisted of 8 questions, 4 on international trade (the first half of the course) and 4 on international finance (second half). All questions required essay style answers, with use of appropriate economic models.

Students were required to answer 3 questions in 3 hours, with additional time to upload their material to the system. 12 students took this exam. The paper was generally well done, resulting in four first class exams ███████████████████████████████ All students appeared to have coped well with the unusual exam circumstances. Some made advantageous use of the possibility to type their answers, inserting images of hand-drawn figures and illustrations where appropriate. It is possible that the ability to review and revise created by typing made for more concise and better structured answers than has been the case with hand-written examination scripts.

Labour Economics and Inequality

A total of 12 candidates took the exam. There were 8 questions altogether, 4 on each part of the course. The distribution of attempts at questions was:
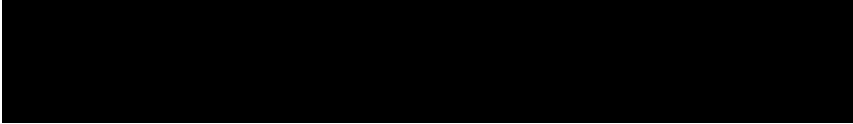
Most students did well.

Questions 1 and 5 were considerably more popular than the other questions.

There was no pattern discernible in terms of some questions being more difficult than others, conditional on the students answering these questions.

Nor, given the small number of students for each question, are there any patterns in terms of

common omissions going beyond a single exam.

That being said, the popular questions (1 and 5) showed noticeable dispersion in terms of the quality of answers given.

Microeconomic Analysis

Twenty-seven candidates sat the paper: ▇ PPE candidates, 11 E&M candidates and ▇▇▇▇ ▇▇▇▇▇▇ Candidates had to answer any four out of six questions. The top ten candidates (6 PPE, ▇▇▇▇▇▇▇▇▇ got high marks in at least two questions, almost no mark below 50, and were rewarded with well-deserved firsts; the bottom five candidates ▇▇▇▇▇▇▇▇ got at least two marks on the low 50s with in most cases at least one mark at or below 40. Their papers were assessed as 2.2's or worse; the remaining twelve candidates (▇▇▇▇▇▇ were spread fairly evenly through the 2.1 band.

Comments on Individual Questions

1. Linear Algebra; Multivariate Calculus (19 attempts)

(a) This part was well answered. Some students reversed the second part of the question and represented the given vector in the new basis instead than on the standard basis. (b) This part was poorly answered: students struggled to apply the definition of linearly independence for functions that was provided in the question. Only a small number of students had a good approach to it. (c) Students struggled to show continuity, but the second part of this subsection was reasonably well answered. ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇

2. Constrained Optimisation (27 attempts)

This question was attempted by all candidates. It was very well answered. Two thirds of the students received a mark of 75% or higher. Most of the rest ended up in the high 2.1-low first. A few students struggled with the last two parts of (d). ▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇.

3. Choice under risk (23 attempts)

This topic was new in the syllabus and was very popular among students. The question was well answered overall although some students struggled to provide clear arguments. ▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇

4. Expected Utility Theory (18 attempts)

This question was more traditional and very well answered. Again, two thirds of the attempts received a mark of 75% or higher although there were a few poor attempts. Some students did not see the independence argument in part (c). ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇

5. Principal-Agent problems (16 attempts)

Some students struggled to formalise the monopolistic problem with the participation constraint. Parts (b) and (c) were relatively well answered except for (c-iii) in which many students were struggling with time (for many this was the last question to answer). Part (d) was poorly answered. Marks ranged from 33% to 90% with a mean in the high 50s.

6. Search (5 attempts)

This was the least popular question. The question was based on a new topic in the syllabus, which was the last topic to be taught. ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇ ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇

Money & Banking

The standard of the scripts was generally good but, in comparison to other years, there were relatively few very strong answers. In many cases candidates gave competent accounts of the lecture material but did not add much material from tutorials or further reading.

Questions one, two and three were the most popular questions.

The reminder of this report provides comments on the answers to individual questions.

Q1 on the transmission mechanism was almost-universally competently answered with narrow and broad channels explained and distinguished. A number of candidates also introduced other channels (bank capital channel, risk-taking channel), although nearly always only briefly. Only a few had points of commentary or critical reflections on the arguments which suggested independent thinking or reading beyond the principal subjects of the lectures.

Q2 on the reduction of inflation between the 1970s and the 1990s was a popular question. There were good answers, but some candidates failed to take seriously the issue of explaining inflation outcomes in the 1990s.

Q3 on hyperinflation was the second most popular question. Most candidates gave a clear account of the Cagan model, and attributed its conclusions to adaptive expectations whilst arguing that alternative assumptions (e.g. portfolio frictions) in a rational expectations world would could lead to the same kind of results. The weakest answers had poor or incomplete diagrammatical representations, failing to explain well the dynamics through which we end up with hyperinflation after an increase in the deficit and the relevance of the assumptions of adaptive expectations in this context. Very few candidates raised the matter of whether the conditions of hyperinflation might raise particular questions about the appropriateness of various assumptions – concerning expectations or otherwise – that they were making.

Q4 on Quantitative Easing was answered by about a third of candidates. Answers tended to be stronger on the benefits of the policy than on the risks or means by which those risks might be mitigated.

Q5 on the sacrifice ratio in various sorts of Phillips curve. The quality of answers was more dispersed than on other questions. Successful answers motivated well the different formulations (some candidates more formally than others) and critically evaluated assumptions made on those models. Poorer answers did not question the accuracy of the first part of the question regarding the hybrid PC. Some candidate had a limited coverage of the literature.

Q6 offering "either/or" on policy credibility was quite a popular question. For the EITHER option candidates struggled with the analysis of PLT with regards to Inflation bias. The component on stabilisation bias followed very closely the lecture slides.

Q7 on the defining characteristics of money was the least frequently answered question but most candidates showed a reasonable acquaintance with the arguments.

Q8 on the optimal rate of inflation was not often answered, but attracted a small number of very good answers where the candidates were able to use the theory they had learned to construct a sharp answer to the question.

Public Economics

Overall, the paper was answered well: out of 30 scripts, ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ 7 were above 70. The best answers really used the theory they had learned to address the questions, rather than just reproducing lecture material.

Question 1: Good answers were very clear on why boundedness of the distribution was an important factor in the particular results obtained for optimal tax rates at the top. Good answers were able to explain why zero at the top did not mean zero elsewhere. Weaker answers reproduced standard material without showing enough understanding.

Question 2: This was generally well answered. One error made was to think that a lack of demand is necessarily a market failure in itself, rather than identifying the underlying cause. Understanding of the Theory of the Second Best was good, and some good efforts at using this to think about the policy. Answers that just wrote down the Diamond-Mirrlees result without relating to the question did not score many marks.

Question 3: This was a very popular part B question. It proved hard for students to excel and there were a lot of good 2.1 answers. The best answers understood the endogeneity of returns and of wages. Less successful answers wasted time providing extensive evidence of the decline of population growth and increase of the dependency ratio, not seeing that the question explicitly addressed situations in which this is already known to be the case.

Question 4: there were not many answers to this question, but ▮▮▮▮▮▮ were outstanding and really applied the basic analysis of optimal commodity tax to the question.

Question 5: There were some very good answers and some very poor ones to this question. Good answers needed to use basic microeconomic analysis of income and substitution effects to think about labour supply effects. Poor answers wasted too much time on types of social welfare function rather than thinking of what the trade-offs are between seemingly improving incentives through lower withdrawal rates of benefits, and increasing revenue demands.

Question 6: Answers to part a showed a good understanding of the Rothschild-Stiglitz model, but all too many scripts then just reproduced the Spence model for education without relating or contrasting the two. Part b answers showed a good understanding of the Obama reforms, but were weaker on applying the theory of why markets may fail from part a to understanding the purpose of the reforms.

Environmental Economics and Climate Change

Summary
The exam was taken by 17 candidates. The average mark was 67. Responses were generally of a high standard, with many showing extensive further reading. In general students seem to enjoy this course and put in a pleasing amount of work.

Question 1
This was the most popular question, but unfortunately the least successful. Too many candidates reprised material they had learnt from prelims about how an environmental problem can be solved using property rights. In fact they had been asked how much it matters how these rights are allocated. Better answers discussed the importance of income effects, and that those damaged by environmental pollution might be very poor; the Myerson-Satterthwaite Theorem; Ostrom's work on community governance of the commons; or problems with thin markets which can be resolved by using market mechanisms to set the initial allocation.

Question 2.
Another very popular question. There were plenty of competent descriptions of the random utility model, and plenty of summaries of the issues with relying on travel costs to infer the full value of a site. However, the specific set-up in the question incorporates two sites which may be much more subsitutable with each other than they are with other tourism destinations. The random utility model fundamentally that all sites are equally substitutable. Since this is not true in this setting, it may be the case that neither site is individually worth preserving, assuming the other exists, but that there is a good case (just from the travel costs perspective) for preserving one of these sites. The best answers understood and explained this.

Question 3
Another reasonably popular question, this time the responses were all good or very good, showing a thorough understanding of the issues that arise when we consider long-term discounting, especially under uncertainty in economic growth, or when our marginal value for environmental goods may increase over time. The best answers showed a deep understanding of the technicalities of Weitzman's (1998) result on long-term discounting, but others distinguished themselves in other ways.

Question 4

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Question 5

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Question 6
There were a handful of answers to this question. The more successful understood that under perfect rationality and government credibility, permit prices change over time following the Hotelling rule, but myopia or distrust in government commitments may keep prices low in the short run -- so that either they will spike at the end of the 10-year period, or the goverment will renege on the cap (showing earlier mistrust to have been rational). As additions to this policy, few students discussed the market stability reserve actually

implemented by the EU, preferring to refer to a cap and collar. And few suggested a carbon tax as an alternative policy.

Question 7
Another popular question, students showed a good understanding of the game theory of international environmental agreements. The leakage of emissions is a bad thing for environmental outcomes if not all countries coorperate. However, it can make commitments to impose trade penalties on defectors more credible, and so make it plausible that (nearly) all countries will join the treaty block. The best answers showed considerable further reading and a deep understanding of this model and its illustration in the Montreal protocol.

Question 8
This question addressed the Oats and Schwab (1988) model. The best answers showed that they understood the model well, as well as citing a lot of further literature providing evidence on whether this effect is indeed significant.
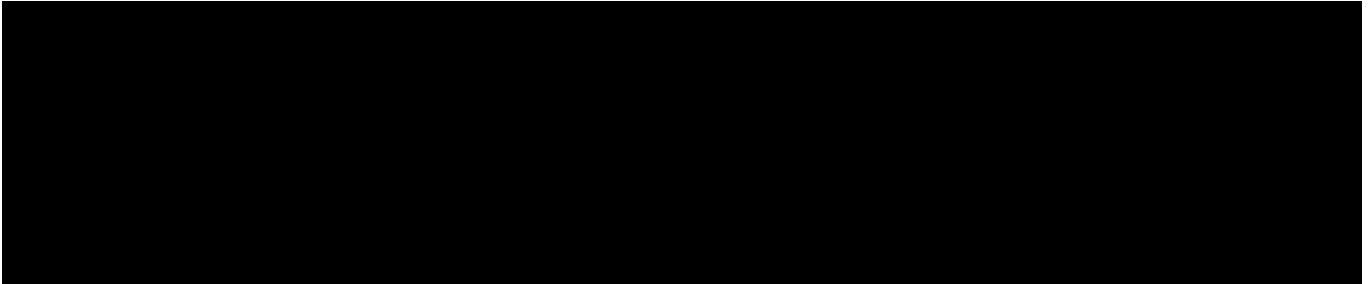
E.   COMMENTS ON THE PERFORMANCE OF IDENTIFIABLE INDIVIDUALS AND OTHER MATERIAL WHICH WOULD USUALLY BE TREATED AS RESERVED BUSINESS

MCs (Mitigating Circumstances Notices) are handled by the Classification Boards.

F.   NAMES OF MEMBERS OF THE BOARD OF EXAMINERS

Internal Examiners
The examiners on the Subject Board were:

Chair, 2021 Economics Subject Board