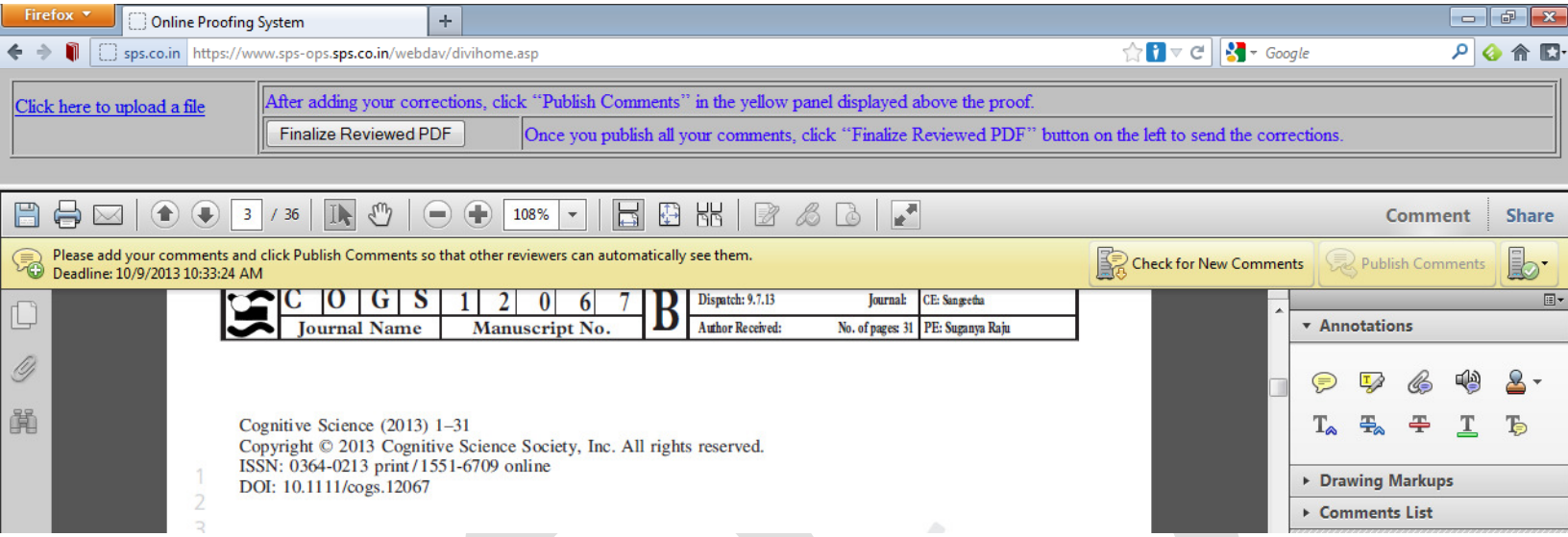
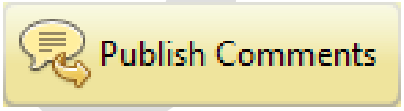
WILEY

Online Proofing System

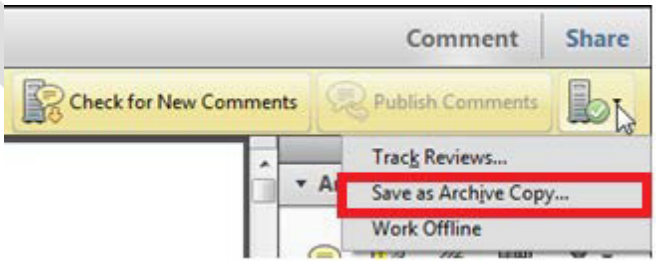
1. Corrections should be marked with the Adobe Annotation & Comment Tools below:



2. To save your proof corrections, click the 'Publish Comments' button. Publishing your comments saves the marked up version of your proof to a centralized location in Wiley's Online Proofing System. Corrections don't have to be marked in one sitting – you can publish corrections and log back in at a later time to add more.



3. When your proof review is complete we recommend you download a copy of your annotated proof for reference in any future correspondence concerning the article before publication. You can do this by clicking on the icon to the right of the 'Publish Comments' button and selecting 'Save as Archive Copy…'.



4. When your proof review is complete and you are ready to send corrections to the publisher click the 'Finalize Reviewed PDF' button that appears above the proof in your web browser window. **Note: Once you click 'Finalize Reviewed PDF' you will not be able to mark any further comments or corrections**.

Firefox & Chrome Users

If your PDF article proof opens in any PDF viewer other than Adobe Reader or Adobe Acrobat, you will not be able to mark corrections and query responses, nor save them. To mark and save corrections, please follow these instructions to disable the built-in browser PDF viewers in Firefox and Chrome so the PDF article proof opens in Adobe within a Firefox or Chrome browser window.

IJCP Journal Code | 12370 Manuscript No. | WILEY | Dispatch: 27.11.13 No. of pages: 3 | CE: Kumarakurubaran PE: Senthil

IJCP THE INTERNATIONAL JOURNAL OF CLINICAL PRACTICE

LETTER

Cardiovascular risk factors among Egyptian university students in relation to residence

To the Editor:

Early identification and treatment of modifiable risk factors of young adults would reduce the possibility of heart attack saving money to their countries (1). So, this study aimed to investigate the prevalence of cardiovascular risk factors among young Egyptian students in relation to residence.

Subjects and methods

This research was conducted by Clinical Research Center, Tanta University and involved 518 students from different faculties of the university, starting from January to May 2012.

The students' age ranged from 18 to 25 years with mean age 21.6 ± 1.3 years. Students with a known history of angina or myocardial infarction were excluded from the study. The study protocol was approved by the Research Ethics Committee Tanta University, Egypt. This study has been performed according to the Declaration of Helsinki. Accepted participants were interviewed and a written informed consent was obtained.

This study adopted the widely known questionnaire of the American College of Sports Medicine (2). Participants were asked to answer the questionnaire and blood samples were taken under the direct supervision of researchers. The questionnaire contained the following items: family history, sedentary life, cigarette smoking, high blood pressure, high blood cholesterol, high blood glucose and obesity, whereas high-density lipoprotein cholesterol was the only negative risk factor.

The total score of risk factors should be from −1 to 7. According to the total risk factor score, participants were classified into three classes: low-risk factors (asymptomatic with score ≤ 1), moderate-risk factors (asymptomatic with score 2–7) and high-risk factors (symptomatic 'frequent chest pain Individuals or who have a known cardiovascular, or pulmonary disease').

Statistical analysis was carried out using Minitab version 16, USA. Chi-squared test and two sample *t*-test were used to identify any differences in risk factors distribution in relation to residence. $p < 0.05$ was considered significant.

Results

About 32 participants were dropped out of the study as a result of incomplete questionnaire meaning that only 486 students completed the study. The female and male participants were 326 (67%) and 160 (33%), respectively. About 45.2% ($n = 220$) were rural residents, whereas 54.8% ($n = 266$) were urban residents.

The prevalence of cardiovascular risk factors is presented in Table 1. Their descending order was as follows: sedentary life 49%, family history 40.3%, obesity 16.8%, hypercholesterolaemia 15.6%, smoking 4.9%, high blood pressure 3.3% and high blood glucose 2%. The percentage of cardiovascular risk classes is represented in Table 1. Low-, moderate- and high-risk factors represented 58.5%, 40.4% and 1.1% of sample, respectively.

The distribution of cardiovascular risk factors between urban and rural areas is presented in Figure 1. There was a significant difference in the distribution of obesity, high blood pressure and hypercholesterolaemia (13.6%, 0.9% and 10% for rural vs. 19.5%, 5.2% and 20.3% for urban, respectively, χ^2 test, $p < 0.05$). Moreover, there was a significant change between urban and rural in only total cholesterol values of participants (159.8 ± 23.2 for urban and 135.2 ± 21.2 for rural areas, two sample *t*-test, $p < 0.05$) as shown in Table 1.

Discussion

The primary focus of this study was to assign the prevalence of cardiovascular risk factors

Table 1 Distribution of cardiovascular risk factors and classes

	Total (n = 486)		Urban (n = 266)		Rural (n = 200)	
	Risk factor incidence (%)	Mean values of participants (mean ± SD)	Risk factor incidence (%)	Mean values of participants (mean ± SD)	Risk factor incidence (%)	Mean values of participants (mean ± SD)
Sedentary life	49	–	46.6	–	51.8	–
Smoking	4.9	–	5.2	–	4.5	–
Family history	40.3	–	37.6	–	41.8	–
Obesity	16.8	BMI = 22.6 ± 3.2	19.5*	BMI = 23.0 ± 2.1	13.6	BMI = 21.6 ± 2.2
High blood pressure	3.3	SBP = 103 ± 19.6 DBP = 75 ± 10.6	5.2*	SBP = 106 ± 16.3 DBP = 78 ± 5.1	0.9	SBP = 100.4 ± 12.8 DBP = 72 ± 7.6
High blood glucose	2	FBG = 93 ± 11.2	2.2	FBG = 94.9 ± 10.2	1.8	FBG = 96.8 ± 13.3
Hypercholesterolaemia	15.6	Chol = 145 ± 19.2	20.3*	Chol = 159.8 ± 23*	10.6	Chol = 135.2 ± 21.2
Risk factor class‡						
Low (%)	284 (58.5)		156 (58.6)		128 (58.1)	
Moderate (%)	196 (40.4)		106 (40.6)		90 (40)	
High (%)	6 (1.1)		4 (1.5)128		2 (0.9)	

BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; FBG, fasting blood glucose; Chol, cholesterol. *Significant difference between urban and rural areas ($p < 0.05$). ‡Low risk is identified by score ≤ 1; moderate risk is identified by score from 2 to 7; and high risk is identified symptoms presence as identified by the American College of Sports Medicine in 2000.

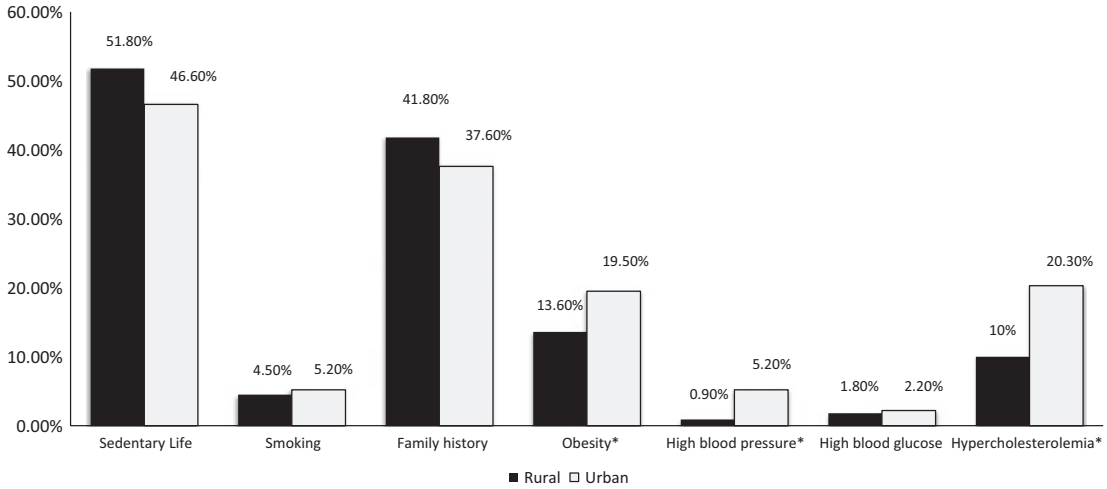


Figure 1 The percentage distribution of cardiovascular risk factors in rural and urban areas. *Significant difference in cardiovascular risk factors distribution ($p < 0.05$)

among university students in Egypt. The topic of the article is novel, and there is little published on this subject for the young population.

The major findings of this study revealed a relatively high frequency of sedentary life, family history (non-modifiable), hypercholesterolaemia and obesity among participants with relative low incidence of smoking, hypertension and hyperglycaemia.

Earlier study on young adults of Brazil showed that there was sedentary life (57.3%), obesity (19.4%), hypertension (1.1%), diabetes mellitus (0.6%) ~~and family history of cardiovascular disease (86.3%)~~ of participants (3).

The overall prevalence of sedentary life was 49% indicating that bad exercise habits might affect a large proportion of adults in Egypt. Our results were supported by earlier studies, which showed high incidence of sedentary life with ranges from 57% to 64% among cardiovascular risk population (3,4). The high incidence of obesity in our study could be explained by adverse nutritional habits that were observed in a large number of participants added to the absence of regular exercise. Earlier studies supported our results (3,4). Also, hypercholesterolaemia was evident in 15.6% of participants of this study. An earlier study showed that about 24% of university students in England had hyperlipidaemia (5).

This study revealed that about 58.5% of the participants had low-risk factors. Those people only required regular check up for risk factors on regular basis with adhering to preventive measures. About 40.4% of students were at moderate risk. This high incidence of moderate-risk factor indicated the importance of initiating preventive programm~~e~~ for the control and the management of cardiovascular risk. Only 1.1% of participants had high cardiovascular risk factor. Despite the low incidence of high risk, those students were advised to contact physician to start a therapeutic plan (2).

An earlier study in USA showed that about 59% of young adults had one or more of the following coronary heart diseases (CHD) risk factors: family history, smoking, hypertension or obesity concluding that CHD risk factors are common in young adults (6).

This study indicated that urban areas showed higher incidence of cardiovascular risk factors (obesity, hypertension and hypercholesterolaemia) than rural one. In addition, cholesterol levels of urban participants were higher than rural participants. These differences can be simply attributed to environmental factors and lifestyle differences such as getting less healthy dietary habits such as junk food, low exercise and high stress of life in urban areas (7). Earlier studies gave controversial results. Oladapo et al. showed similar prevalence of risk factors in rural like in urban population (8). In contrast, Vrdoljak et al. indicated the presence of distribution difference in cardiovascular risk factors between urban and rural regions (9).

In conclusion, the majority of Egyptian students showed a relative great risk of cardiovascular risk, which necessitates the starting of prevention programm~~e~~. These preventive programm~~e~~s should be more focused in urban regions.

Acknowledgement

This study was supported and funded by Clinical Pharmacy Research Center in Tanta University.

K. ~~Abd Elkawy~~* M. Ibrahim,[†] N. Elashmawy,[‡] ~~A. Elsis,~~[§] A. Habib,[¶]
*Clinical Pharmacy Faculty of Pharmacy Kafre Elshiekh University ~~Kafre El-Shiekh~~ Egypt
[†]Cardiology Faculty of Medicine Mansura University Mansura Egypt
[‡]Biochemistry Faculty of Pharmacy Tanta University Tanta Egypt
[§]~~Pharmacology Faculty of Pharmacy Tanta University Tanta Egypt~~
[¶]Analytical Faculty of Pharmacy Tanta University Tanta Egypt
E-mail: khaledsobhy3@yahoo.com

References

1 Gersh B, Sliwa K, Mayosi B, Yusuf S. The epidemic of cardiovascular disease in the developing world: global implications. *Eur Heart J* 2010; **31**: 642–8.
2 Ghai N, Jacobsen S, Eeden S et al. A comparison of lifestyle and behavioral cardiovascular disease risk factors between Asian Indian and White non-Hispanic men. *Ethn Dis* 2012; **22**(2): 168–74.
3 Gomes E, Moreira T, Pereira H et al. Cardiovascular risk factors in young adults of a city of the Brazilian Northeastern. *Rev Bras Enferm* 2012; **65** (4): 594–600.
4 McCowen K, Blackburn G. Obesity and weight control. In: Wong ND, Black HR, Gardin JM eds. *Preventive Cardiology*, 2nd edn. New York: McGraw Hill, 2005: 357–83.
5 Kulkarni S, Sreenivas A. Prevalence of prehypertension in young military adults and its association with overweight and dyslipidaemia. *Indian J Med Res* 2011; **134**(2): 162–7.
6 Kuklina E, Yoon P, Keenan N. Prevalence of coronary heart disease risk factors and screening for high cholesterol levels among young adults, United States, 1999–2006. *Ann Fam Med* 2010; **8**(4): 327–33.

7 Li H, Xu T, Tong W, Liu Y, Zhao L, Zhang Y. Comparison of cardiovascular risk factors between prehypertension and hypertension in a mongolian population, Inner Mongolia, China. *Circ J* 2008; **72**: 1666–73.
8 Oladapo O, Salako L, Sodio O, Shyinka K, Adedapo K, Falase A. A prevalence of cardiometabolic risk factors among a rural Yoruba south-western Nigerian population: a population-based survey. *Cardiovas J Africa* 2010; **21**(1): 26–31.
9 Vrdoljak D, Bergman Marković B, Kranjčević K, Ivezić Lalić D, Vučak J, Katić M. How well do anthropometric indices correlate with cardiovascular risk factors? A cross-sectional study in Croati. *Med Sci Monit* 2012; **18**(2): PH6-11.

Disclosure

The authors declare that there are no conflicts of interest.

doi: 10.1111/ijcp.12370

Author Query Form

Journal: IJCP

Article: 12370

Dear Author,
During the copy-editing of your paper, the following queries arose. Please respond to these by marking up your proofs with the necessary changes/additions. Please write your answers on the query sheet if there is insufficient space on the page proofs. Please write clearly and follow the conventions shown on the attached corrections sheet. If returning the proof by fax do not write too close to the paper's edge. Please remember that illegible mark-ups may delay publication.

APPROVED

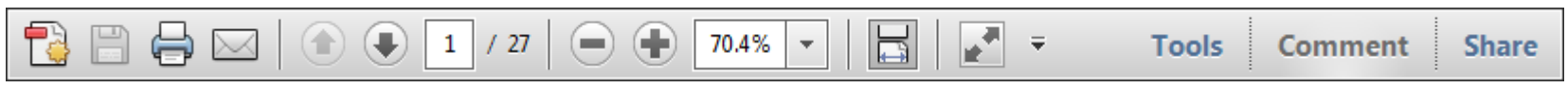
Many thanks for your assistance.

Query reference	Query	Remarks
1	AUTHOR: To facilitate sequential numbering, reference numbers have been reordered. Please check.	
2	AUTHOR: Please give manufacturer information for this product 'Minitab version 16': company name, town, state (if USA), and country.	

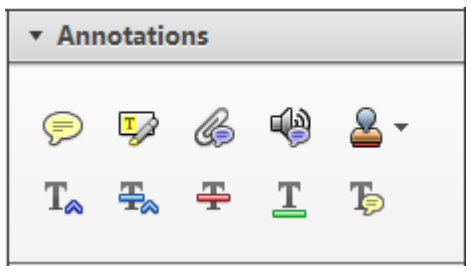
USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

Required software to e-Annotate PDFs: Adobe Acrobat Professional or Adobe Reader (version 8.0 or above). (Note that this document uses screenshots from Adobe Reader X)
The latest version of Acrobat Reader can be downloaded for free at: http://get.adobe.com/reader/

Once you have Acrobat Reader open on your computer, click on the Comment tab at the right of the toolbar:



This will open up a panel down the right side of the document. The majority of tools you will use for annotating your proof will be in the Annotations section, pictured opposite. We've picked out some of these tools below:

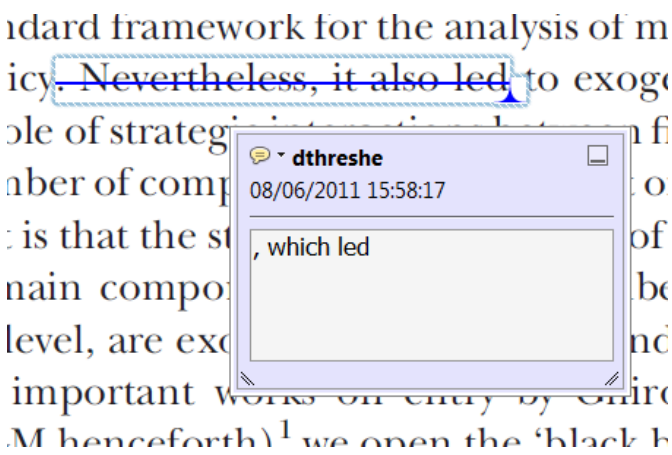


1. Replace (Ins) Tool – for replacing text.

Strikes a line through text and opens up a text box where replacement text can be entered.

How to use it

- Highlight a word or sentence.
- Click on the Replace (Ins) icon in the Annotations section.
- Type the replacement text into the blue box that appears.

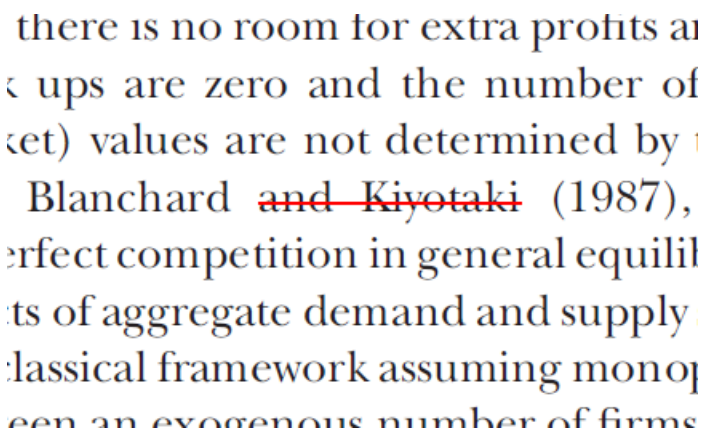


2. Strikethrough (Del) Tool – for deleting text.

Strikes a red line through text that is to be deleted.

How to use it

- Highlight a word or sentence.
- Click on the Strikethrough (Del) icon in the Annotations section.

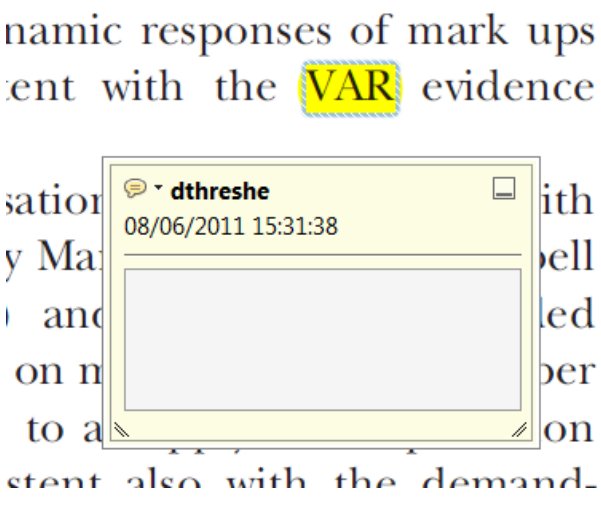


3. Add note to text Tool – for highlighting a section to be changed to bold or italic.

Highlights text in yellow and opens up a text box where comments can be entered.

How to use it

- Highlight the relevant section of text.
- Click on the Add note to text icon in the Annotations section.
- Type instruction on what should be changed regarding the text into the yellow box that appears.

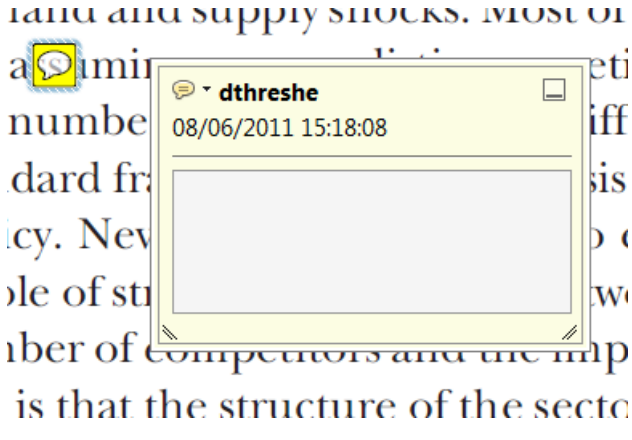


4. Add sticky note Tool – for making notes at specific points in the text.

Marks a point in the proof where a comment needs to be highlighted.

How to use it

- Click on the Add sticky note icon in the Annotations section.
- Click at the point in the proof where the comment should be inserted.
- Type the comment into the yellow box that appears.



WILEY-BLACKWELL

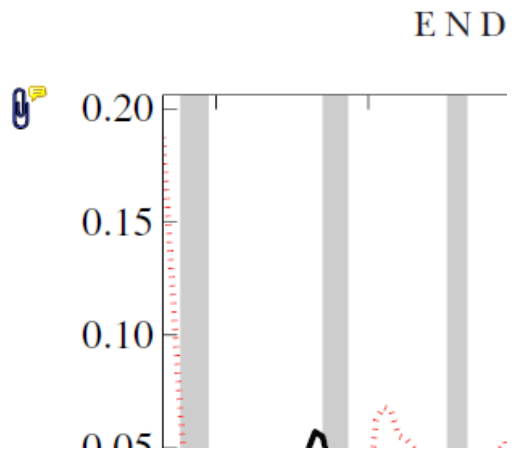
USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

5. Attach File Tool – for inserting large amounts of text or replacement figures.

Inserts an icon linking to the attached file in the appropriate pace in the text.

How to use it

- Click on the Attach File icon in the Annotations section.
- Click on the proof to where you'd like the attached file to be linked.
- Select the file to be attached from your computer or network.
- Select the colour and type of icon that will appear in the proof. Click OK.

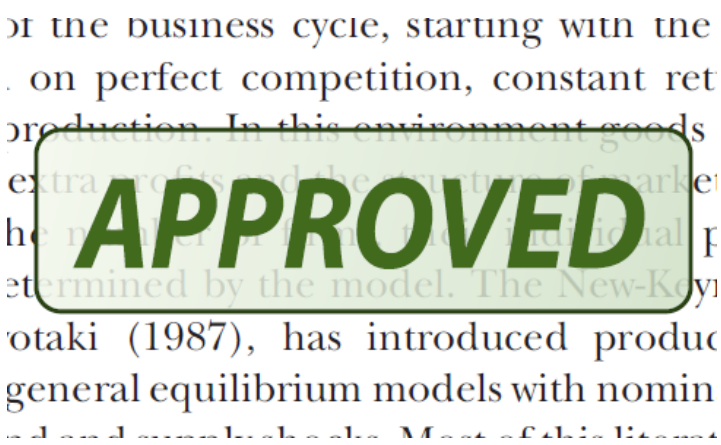


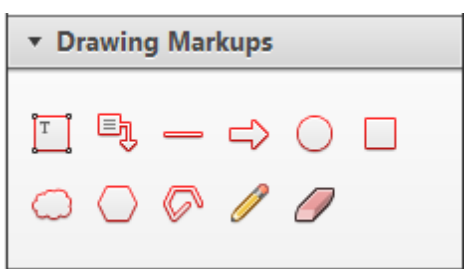
6. Add stamp Tool – for approving a proof if no corrections are required.

Inserts a selected stamp onto an appropriate place in the proof.

How to use it

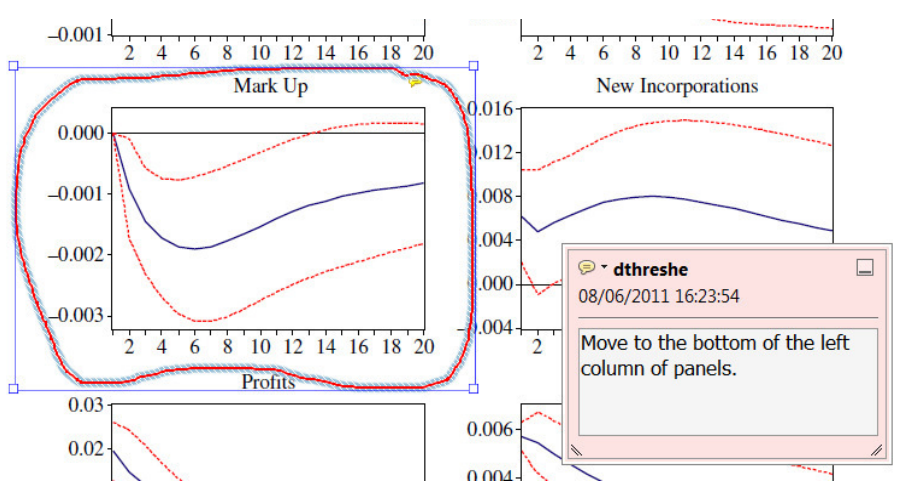
- Click on the Add stamp icon in the Annotations section.
- Select the stamp you want to use. (The Approved stamp is usually available directly in the menu that appears).
- Click on the proof where you'd like the stamp to appear. (Where a proof is to be approved as it is, this would normally be on the first page).





7. Drawing Markups Tools – for drawing shapes, lines and freeform annotations on proofs and commenting on these marks.

Allows shapes, lines and freeform annotations to be drawn on proofs and for comment to be made on these marks..



How to use it

- Click on one of the shapes in the Drawing Markups section.
- Click on the proof at the relevant point and draw the selected shape with the cursor.
- To add a comment to the drawn shape, move the cursor over the shape until an arrowhead appears.
- Double click on the shape and type any text in the red box that appears.

For further information on how to annotate proofs, click on the Help menu to reveal a list of further options: