

**博士論文審査結果報告**  
**Report on Ph.D. / Doctoral Dissertation Defense**  
National Graduate Institute for Policy Studies (GRIPS)  
Associate Professor HSU Minchung

審査委員会を代表し、以下のとおり審査結果を報告します。

On behalf of the Doctoral Thesis Review Committee, I would like to report the result of the Ph. D. / Doctoral Dissertation Defense as follows.

学位申請者氏名 Ph.D. Candidate	Opoku Kwadwo		
学籍番号 ID Number	PHD13104		
プログラム名 Program	Policy Analysis Program		
審査委員会 Degree Committee	主査 Main referee	HSU Minchung	主指導教員 Main Advisor
	審査委員 Referee	PORAPAKKARM Ponpoje	副指導教員 Sub Advisor
	審査委員 Referee	藤 本 淳 一 FUJIMOTO Junichi	副指導教員 Sub Advisor
	審査委員 Referee	飯尾 潤 IIO Jun	博士課程委員会委員長代理 Acting Chairperson of the Doctoral Programs Committee
	審査委員 Referee	山田 知明 YAMADA Tomoaki 明治大学 商学部 教授	外部審査委員 EXternal Referee
論文タイトル Dissertation Title  (タイトル和訳)※ Title in Japanese	Essays on Fiscal and Pension Policies in Developing Economies  発展途上国経済における財政政策及び年金政策に関する研究		
学位名 Degree Title	博士（公共経済学） Ph.D. in Public Economics		
論文提出日 Submission Date of the Draft Dissertation	平成 29 (2017) 年 10 月 17 日	論文審査会開催日 Date of the Degree Committee Meeting	平成 29 (2017) 年 11 月 14 日
論文発表会開催日 Date of the Defense	平成 29 (2017) 年 11 月 14 日	論文最終版提出日 Submission Date of the Final Dissertation	平成 30 (2018) 年 2 月 27 日
審査結果 Result	合格 Pass		
	不合格 Failure		

※タイトルが英文の場合、文部科学省に報告するため、和訳を付してください

If the title is in English, please translate in Japanese in order to report MEXT.

## 1. 論文要旨 **Thesis overview and summary of the presentation.**

Two main topics are studied in the dissertation. First topic is optimal income taxation in developing countries. In the literature, a famous finding is that capital income tax should be set at zero and the government uses labor income and other tax tools to finance its expenditures. While many studies have examined the optimal income taxation, very few have considered key features in developing countries. In particular, developing countries have large informal sectors, in which income is not monitored for taxation. It is important to explicitly consider informal sector and human capital investment in determining optimal tax design. This dissertation has tried to investigate the optimal tax allocation between labor and capital income taxes in developing countries. It develops a two-sector general equilibrium overlapping-generations model with endogenous education or human capital investment to provide a quantitative analysis.

Second topic is expansion of pension in developing countries. The demographic transition in many developing countries suggests that in the next few decades support for old people would be a critical problem. However, pension is available only for a small proportion of population in developing countries. How to expand pension coverage without largely increasing government's financial burden is an important issue. This dissertation has investigated alternative designs of incentive mechanism for pension provision such that most people in developing countries would participate the pension program. It develops an equilibrium life cycle model that consists of individuals facing mortality risk and income risk to investigate the role of matching contributions and payment options in influencing pension participation in developing countries. Data from Ghana is used for estimation/calibration and quantitative analysis. The simulations results suggest that matching contributions (pension saving subsidy) targeted to informal workers could be a potent instrument to encourage voluntary participation and contribution by informal workers. The policy is found to be welfare improving because of the redistribution of income from the rich formal workers to the poor informal workers, insurance against risk of poverty from annuity, intra-generation redistribution through accidental bequest from mortality premium and reduction in self-control costs.

In presentation, Mr Opoku first introduced why we shall care public finance and pension issues in developing countries. He showed the findings in a very organized way and carefully explained findings. There followed questions and comments from the examiners and audience on the floor. He provided satisfactory answer to most of questions regarding methodology and findings. He also received useful comments/suggestions from examiners

to improve analysis and policy implication.

## 2. 審査報告 Notes from the Degree Committee (including changes required to the thesis by the referees)

Mr. Opoku passed the defense with a median score 5. The committee agreed that his work made a contribution to extend the understanding of taxation and pension issues in developing countries, which commonly have large informal sectors and low pension coverages. The previous studies on these issues normally focus on developed countries, and so we still do not have sufficient knowledge to answer what policies on these issues are appropriate for developing countries. Mr. Opoku's study tries to fill the gap in the literature with an advanced macroeconomic methodology.

The committee also provided many useful suggestions to improve the dissertation during the defense. For example, the outside member, Professor Yamada Tomoaki, suggested:

1. The author considers a linear tax system. However, progressive tax system may be less distortionary and improve human capital investment. If the progressive tax system is difficult to introduce due to technical reasons, how about setting different tax rates on informal sector and formal sector?
2. From the practical view point, developing countries resort tax revenues from indirect tax at least partially because labor income tax and corporate tax have tax-evasion problem. If possible tax evasion problem should be included in the model in abstract form.
3. Regarding the social security problem, support by families will be important. Probably a good social security should be designed by taking into account the possibility of them.
4. In the literature review, so-called "New Dynamic Public Finance" by the Mirrleesian framework should be mentioned. As the model is quite different from the model in this dissertation, it is not directly applicable. But I think that framework will also be useful for future research.

Another committee member, Professor Porapakkarm Ponpoje, suggested:

1. The assumption that the firm in the formal sector maximizes profits with constraints of wage premium between formal and informal sector ( $\kappa_i$ ) is inconsistent with the assumption in the production sector. (see page 26). In addition, the author should provide micro-founded arguments for the premium

that are consistent with the other assumptions of the model.

2. This assumption might importantly affect the findings since all households want to work in formal sector due to a higher wage, even after taxes. But the assumption imposed above rations the job in the formal sector. (see equation 3.18)
3. The author needs to provide a good argument for the necessity of the non-standard preference (temptation to consume all cash-on-hand). See page 57.
4. In the model, the difference between saving in bank and pension saving is illiquidity. In the data, only small fraction of people in informal sector (1.5%) participates in the pension contribution. The author should explore other possible reasons of this low participation in addition to using a non-standard preference, e.g., some large uncertainty for liquidity during working ages or large survival uncertainty. The author needs to argue why these other reasons might be a second order importance. The results of policy interventions depend critically on the underlying mechanism.
5. The minimum income transfer is arbitrarily set to 10%. This parameter is important for the welfare findings. In addition, when calculating welfare I do not understand why the author needs to use the consumption measure (CEC) in Eq 4.18, which is inconsistent with households' preference.
6. Overall, the author needs to recheck all typos, particularly the model. All notations must be clearly explain when they first appear in the text.

The committee decided to ask the main adviser to supervise the revision.

**3. 最終提出論文確認結果 Confirmation by the Main Referee that changes have been done to the satisfaction of the referees**

Mr. Opoku carefully prepared a letter of response to address all the comments/suggestions, point by point, and submitted it with a revised dissertation on Feb 15 to the main adviser. After checking the response letter and revised dissertation, the committee members all confirmed that they were satisfied.

**4. 最終審查結果 Final recommendation**

The committee recommended the degree of Ph.D. in Public Economics to be awarded to Mr. Opoku.