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Remittances and the Redistributive Tax Policy in Ghana: A Computable General Equilibrium Approach

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Abstract

This paper numerically explores the distributive tax policy for improving both efficiency and equity with increased remittances in Ghana within a computable general equilibrium (CGE) framework. The generalized framework with the latest Ghanaian input-output table of year 2005 with 59 different production sectors provides the following results: First, the government can improve both efficiency and equity by using a government surplus generated by increased remittances without additional tax revenue. Second, if the government is concerned about equity, then a surplus used for more direct transfers to the rural households results in the best outcome in terms of equity. Third, such a policy also results in the improvement in efficiency. Welfare of not only rural but also urban households improves by such a policy through its strong stimulation effect on the demand side. Fourth, while the impact through the supply side is relatively smaller, an introduction of subsidies to production of the 'Cocoa Beans' sector results in the best outcome for the improvement in efficiency and equity among all supply side tax policies. Fifth, if the government is concerned only about efficiency, then a policy to use a surplus for more government spending on education or health achieves the highest efficiency through its direct demand effect. Under such a policy, the positive impact on equity is limited. Finally, while the Ghanaian economy can enjoy the largest benefits in improved efficiency as a whole when a surplus is used for more government spending on education or health, increased efficiency gain will be more distributed to the government sector in comparison with the case when a surplus is used for more direct transfers to the rural households.

Keywords: Ghana, Remittance, Efficiency, Equity, Taxation, Computable General Equilibrium (CGE) Model, Simulation

JEL Classification: C68, D58, H20, and O15

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1 Introduction

This paper explores the impact of several tax policies on economic growth and income inequality in Ghana with its increasing trend of international remittances within a computable general equilibrium (CGE) framework with its latest Input-Output Table[1].

Remittances in Ghana keep increasing in accordance with an increase in the number of emigrants, as shown in Figure 1. The increasing trend of inflows of remittances has resulted in its relatively more importance and its growing impact on the whole Ghanaian economy. The World Bank (2015) forecasts that the global flows of remittances will again recover in year 2016 and 2017 in line with the expected global economic recovery. The increasing trend of remittances and an expectation of global economic recovery both imply that remittances will play a more important role as the Ghanaian economy stably grows in the future.

Dadson and Kato (2015) examined the impact of international remittances and the brain drain on the Ghanaian economy, and found out that the overall impact of both international remittances and the brain drain has resulted in poverty reduction but more income inequality in Ghana[2]. Indeed income inequality has been becoming wider in Ghana recently, as Ghana Statistical Service (2014) reported in its latest survey[3]. Furthermore, Dadson and Kato (2015) suggested a possibility of the current tax system of Ghana to induce more income inequality when more international remittances expand the Ghanaian economy through its strong impact on the demand side.

The purpose of this paper is to explore the current tax system when more international remittances stimulate the Ghanaian economy. Since a stimulated economy pays more taxes through an expansion of taxable income and production, the Ghanaian government can obtain a surplus in its budget through the stimulation impact of remittances even if the

[1] FORTRAN programmes have been used for the numerical calculation in this paper.

[2] They also pointed out that international remittances to the rural households would work to reduce income inequality.

[3] All survey data conducted in the past (Ghana Living Standards Survery (GLSS) round 3 (1991/1992), 4 (1998/1999), and 5 (2005/2006) showed the Gini Coefficient improved over time until GLSS 6 (2012/2013) was produced.

current tax system remains unchanged, as long as the government maintains its expenditure level. Then the government can use the surplus for several tax polices to more stimulate an economy and/or to reduce income inequality without any new revenue resources. As Lipsey and Lancaster (1956) demonstrated, the direction of the tax system towards the first best environment does necessarily not give an economy a better outcome as long as distortionary taxes already exist. Furthermore, if there are several taxes available for the government to improve efficiency and equity, then it seems more difficult to select a tax policy, since different taxes affect a whole economy through several different channels. Thus, this paper employs a general equilibrium framework to capture the whole impact of tax policies on efficiency and equity in Ghana. The latest Input-Output Table is used to specify parameter values in our CGE model, and our benchmark model can perfectly capture the actual Ghanaian economy within the model.

In order to examine the impact of tax policies on income inequality, this paper explicitly considers several different inputs in production such as skilled labor, unskilled labor, capital for agriculture, general capital, and land. This paper also takes into account heterogeneity of households in the rural and urban areas, since Djiofack et al (2013) pointed out for the Cameroon case that an increase in remittances would result in more income inequality due to the fact that a larger ratio of remittances will be sent to relatively richer households, which live in the urban area.

In addition to careful parameter estimation for our realistic benchmark model, this paper explicitly takes into account the following key issue argued in the current literature on remittances: This paper explicitly considers how households use increased remittances. As Adams and Cuecuecha (2010, 2013) empirically pointed out recently, remittances would be used for particular goods; investment goods, and the receipt of remittances can cause behavioral changes at the household level. Adams and Cuecuecha (2013) empirically found out further that increased remittances would be used for more consumption of education, housing, and health in Ghana. Thus, this paper focuses on the case when increased remittances are used only for more consumption of education, housing, and health[4].

Our simulations show the following results. First of all, increased international remittances induce a government surplus due to the fact that an increase in remittances stimulates an economy, thus resulting in an expansion of taxable income and production, as long as the government expenditure remains unchanged. Secondly, the government can improve both efficiency and equity by using the surplus without additional tax revenue. Thirdly, while the government can improve both efficiency and equity, there is a trade-off between efficiency and equity among tax policies. Fourthly, if the government is concerned more about equity, then a surplus used for more direct transfers to the rural households results in the best outcome in terms of equity. Fifthly, such a policy also results in the improvement in efficiency. This is because increased direct transfers stimulate consumption of the rural households, and thus more income of all sectors. Welfare of not only rural but also urban households improves by such a policy through its strong stimulation effect on the demand side. As Agbola (2013) pointed out, our simulation result also indicates that the Ghanaian economy is driven by its strong effect on the demand side. Sixthly, while the impact of a tax policy through the supply side of the economy is relatively smaller than that through the demand side, an introduction of subsidies to production of the 'Cocoa Beans' sector results in the best outcome for the improvement in efficiency and equity among all supply side tax policies. Seventhly, if the government is concerned only about efficiency, then, a policy to use a surplus for more government spending on education or health sector achieves the highest efficiency through its direct demand effect. Under such a policy, the positive impact on equity is limited. Finally, while such a policy to use a surplus for more government spending on education or health results in the best achievement in efficiency, the distribution of efficiency gain between the government and the private sectors differs between the case of more direct transfers to the rural households and the case of more government spending on education or health. While the Ghanaian economy can enjoy the largest benefits in improved efficiency as

[4]Dadson and Kato (2015) investigated other cases, and they found out that the impact in this case is the largest.

a whole when a surplus is used for more government spending, increased efficiency gain will be more distributed to the government sector in comparison with the case when a surplus is used for more direct transfers to the rural households. While a tax policy to provide the rural households with more direct transfers induces the second best outcome in terms of efficiency, it achieves the best outcome in terms of equity, so that both rural and urban households can enjoy the highest welfare. In this case, efficiency gain is more distributed to the private sector. While both policies with more government spending and with more direct transfers can achieve more efficiency as well as more equity, there is still a trade-off between efficiency and equity.

The paper is organized as follows. The next section reviews the literature on remittances, and then Section 3 explains the data and benchmark model. Section 4 simulates several scenarios with results and evaluations. Section 5 concludes the paper.

2 The Literature

The impact of international remittances and migration on economic growth, poverty, and income inequality in the countries of origin has growingly received great attention in the literature. By distinguishing remittances from migration, Rapoport et al (2006) surveyed the literature from macro and micro perspectives. They pointed out that the full impact of remittances on economic growth, capital accumulation, and income inequality is very complicated, and also that remittances have direct and indirect effects as well as different impact over time. Adams (2011) also surveyed the recent empirical literature which is based on the household survey data, and he summarized the impact of remittances on poverty, income inequality, health, investment, labor supply, and economic growth. As both Rapoport et al (2006) and Adams (2011) pointed out, the results are quite mixed while a number of research have been conducted.

On the impact of remittances on poverty reduction, however, it is rather more straightforward: Remittances seem to reduce poverty. Adams and Page (2005) concluded with a wide range of the data set of 71 developing countries that remittances reduce poverty in developing countries, and also provided a suggestion that the government should implement a policy to decrease the transaction cost of remittances, so that increased remittances would reduce more poverty in developing countries[5]. Acosta et al (2008) investigated the impact of international remittances on poverty reduction in Latin American and Caribbean countries, and they also concluded that remittances reduce poverty in such countries. Gupta et al (2009) explored the impact of remittances on poverty reduction in Sub-Saharan African countries, and they also found the positive effect of remittances on poverty reduction. They also pointed out the positive impact of remittances for the development of financial sectors[6] as well as the bad influence of the high transaction cost in the formal financial sector for remittances in Sub-Saharan Africa. Adams and Cuecuecha (2013) studied the impact of remittances on investment and poverty in Ghana with 2005-6 Ghana Living Standard Survey (GLSS 5), and they also concluded the positive impact on poverty reduction. They explicitly distinguished remittances between internal and international ones, and concerned how to spend remittances. They found out that households in Ghana would spend more at the margin on three investment goods: education, housing, and health. Adams and Cuecuecha (2010) also investigated the same topic for Guatemala, and they reached the same result: Remittances would be spent more on investment goods. As Rapoport et al (2006) pointed out the importance of how to spend remittances[7], more expenditure of remittances on investment goods would lead to higher economic growth, which would also result in further poverty reduction in the future.

[5]Freund and Spatafora (2008) argued the impact of the transaction cost on remittances, and they found out that the higher transaction cost would result in the smaller amount of remittances. They also pointed out a possibility of the negative impact of the higher transaction cost to use more informal channels of sending remittances to the countries of origin.

[6]Mamun et al (2015) recently argued that the development of the financial sector is important for stimulating remittances. They also empirically found no evidence of the negative impact of remittances on labor productivity.

[7]Kabki et al (2004) investigated the behavior of households regarding how to spend remittances for Netherlands-based Ghananian migrants based on interviews, and they also concluded that remittances would be spent mainly on investment goods such as housing and family business in the country of origin.

In terms of the impact of remittances on income inequality, results are really mixed (Lipton (1980), Stark et al (1988), and Taylor (1992)). While Lipton (1980) pointed out a possibility of the effect of remittances on an expansion of inequality between rural and urban areas, Stark et al (1988) argued the sensitivity of results of the effect of remittances on inequality by using their extended Gini Index. Taylor (1992) explicitly took into account the indirect and the long run effects to investigate the full impact of remittances on inequality, and they found an inverted U-shaped curve between remittances and inequality over time[8]: Due to both the direct and the indirect effects in the short run, inequality would expand at the beginning, but the externality effect starts to reduce inequality in the long run[9]. As Barham and Boucher (1998) pointed out, the results of impact of remittances on income inequality would depend on two key issues; the specific economic question and the econometric or statistical techniques. They studied the impact of remittances on income inequality for Nicaragua, and they reached their conclusion that the result differs depending upon the specific economic question: They estimated two cases when remittances are simply treated as exogenous transfers and also when they are treated as a potential substitute for home earnings, and in the former case remittances reduces inequality, while in the latter case they would oppositely increase inequality. Acosta et al (2008) found out the sensitivity of the impact of remittances on inequality among different Latin American and Caribbean countries, and they argued that the difference among countries matters for the impact on inequality while they also found a small positive effect of remittances on inequality.

Regarding the research on Ghana and Africa in terms of remittances, in addition to Gupta et al (2009) and Adams and Cuecuecha (2013), Agbola (2013) and Djiofack et al (2013) should be noted. Agbola (2013) empirically found out the positive impact of remittances on

[8]While the context is different, Adams (2009) found an inverted U-shipaed relationship between per capita GDP and per capita remittances by using the 76 developing country data. Adams (2009) investigated the reason why the amount of remittaces differs among different developing countries, and found out that more skilled (educated) migrants remit less. Faini (2007) also obtained the same result in his paper where he also investigated the negative impact of migration of skilled workers (the so-called brain drain).

[9]Mckenzie anf Rapoport (2007) explicitly studied the network effect, which is smiliar to the externality effect in Taylor (1992), and they also found an inverted U-shaped curve between the number of migrants and inequality.

economic growth through its stimulation effect on the demand side as well as the crowding out effect of the conventional government policy on the private activities in Ghana. He argued that the government spending should be shifted onto more production-enhancing sectors such as education and health related sectors. Djiofack et al (2013) constructed a computable general equilibrium (CGE) model[10] for Cameroon with parameter values estimated with the African country data set, and presented several suggestive results for African countries. In particular, They found out that the effect of remittances on poverty reduction is quite limited, and also that remittances would result in an expansion of income inequality due to the fact that the amount of remittances sent by skilled workers abroad is much larger than that by unskilled workers. Since households living in the urban area are richer than those in the rural area, remittances would further widen the income gap between the urban and rural areas.

This paper tries to develop a computable general equilibrium (CGE) model to numerically measure the impact of several tax policies on efficiency and equity when more remittances cause a wider income gap with higher GDP. As shown in the next section, more remittances to the urban households indeed result in more income, but higher income inequality.

While the literature above consists of studies basically with econometrics techniques, this paper employs a multisector general equilibrium model. While Djiofack et al (2013) econometrically estimated parameter values for Cameroon with the African country data set, this paper uses the latest Input-Output table of Ghana with 59 private sectors for parameter specification, so that the benchmark model can perfectly re-produce the actual Ghanaian economy within our model. Any simulations cannot be convincing without a good-fitted benchmark model. Then this paper uses the well-fitted benchmark model to simulate several scenarios about tax policies to explore the impact on efficiency and equity. To our best knowledge, there is few work on the impact of tax policies on efficiency and equity

[10]Guha (2013) constructed a DSGE model to investigate the Dutch Disease effect of remittnaces, and presented channels that remittances generates the similar impact on an economy, where a tradable good industry would negatively be affected by its spending effect on the exchange rate and the resource movement effect on the tradable good industry.

with remittances, while current studies in the literature focus on the impact of remittances itself. The main purpose of this paper is to investigate the best tax policy which achieves the highest efficiency with the minimized income inequality, and thus our analysis would be valuable to provide several policy implications as well.

3 Numerical Analysis

This paper uses the latest input-output table of Ghana within a general equilibrium framework, in order to make the simulation analysis realistic. By using the actual input-output table of Ghana, the paper has successfully realized the real economy within the model. This paper employs the conventional static computable general equilibrium (CGE) model with the actual input-output table of Ghana of year 2005. Note that all parameter values in the model are calculated by using the actual data, so that the calculated values of endogenous variables obtained within the model also become quite realistic.

3.1 Data

The latest input-output table of Ghana of year 2005 with 59 different intermediate sectors has been used in order to construct the social accounting matrix (SAM), which is given in Appendix 5.

The World Bank (2006) points out that the true size of international remittances flows through formal and informal channels may be much higher than the formal size by perhaps 50 % or more. The Bank of Ghana reported that the total size of private transfers in year 2005 was 1549.76 million US dollars, and also that more than 80 % of the amount of received remittances was sent privately and only 13 % was carried out through banks or money transfer agencies. In the latest input-output table of Ghana of year 2005, while there are items of official international remittances to rural and urban households through banks and money transfer agencies, the values of these items are relatively too small compared to the reported value by the Bank of Ghana. Then private transfers from abroad are categorized in exports of sector 51 in the input-output table, and it is assumed in this paper that the amount of private transfers is also included in international remittances, in order to capture the true size of international remittances[11]. Table 1 shows the amount of international remittances obtained from the input-output table of Ghana of year 2005 after the modification of the treatment of exports of sector 51. As the table shows, the amount of international remittances to the urban households is much higher than that to the rural households, and the total income per capita in the urban area is also much higher than that in the rural area, as shown in Table 2. This implies, as Djiofack et al (2013) pointed in the Cameroon case, that more international remittances would result in more income inequality, since the more amount of remittances would be sent to richer households in the urban area.

3.2 Benchmark Calibration

The general equilibrium model consists of 59 different production sectors, heterogenous households, and the government. Each of 59 production sectors uses self-employed, unskilled labor, skilled labor, land, agriculture specific capital, general capital, land, and intermediate production goods in its production in order to maximize its profits. Each production sector optimally determines how much it exports its own good, how much it imports goods for its production, and how much it sells its own good domestically.

Households are heterogenous, depending on the place where they live; the rural area household, and the urban area household. Each household maximizes its utility which is defined over 59 different goods produced by 59 different production sectors. Disposal income of rural and urban households consists of after tax labor and capital income, transfers from the government, and remittances. Remittances include internal (from Ghana) and international (from abroad) remittances. The government imposes taxes and tariffs on and gives subsidies

[11]The total value of exports of sector 51 was 7492.086 billion in GHC (old Ghana Cedis), which is equal to 173.21 million US dollors, in the original input-output table of year 2005. This size is relatively very large compared to the amount of exports of other sectors due to the fact that it contains private transfers from abroad. Then, this amount is assumed to be treated as informal remittances in the paper.

to 59 different production sectors. The government also imposes a labor income tax on the households in the rural and urban areas, and gives transfers to them. The total tax revenue is used for its expenditure. 59 different commodity markets, and factor markets are all fully competitive, so that all prices are determined at the fully competitive level. 59 different production sectors and the heterogenous households take all prices, tax rates, and subsidy rates as given. The detailed explanation about the employed model is given in Appendix 1.

The benchmark case should reflect the real Ghanaian economy in order to make the subsequent simulation scenarios realistic. Thus, the benchmark model should carefully be calibrated until the calculated values of all endogenous variables within the model become close to the actual values. Appendix 2-1 to Appendix 2-9 show the calculated model values as well as the corresponding actual values in year 2005. Note that the tax rates shown in Appendix 3-1 to Appendix 3-4 have been calculated by using the actual amount of taxes collected, so that they can be interpreted as the average proportional rates. Appendix 4-1 to Appendix 4-7 present parameter values for the benchmark model.

4 Simulation Analysis

Since the benchmark case successfully re-produces the actual Ghanaian economy, it is now used to compare the current Ghanaian economy with possible situations.

While the main purpose of this paper is to explore the impact of several tax policies on efficiency and equity when inflows of remittances increase, it is important to show the impact of more remittances on the Ghanaian economy. Adams and Cuecuecha (2010, 2013) empirically pointed out recently that remittances would be used for particular goods; investment goods, and the receipt of remittances can cause behavioral changes at the household level. Adams and Cuecuecha (2013) further found out that increased remittances would be used for more consumption of education, housing, and health in Ghana. Thus, this paper only focuses on the case when increased remittances are used only for more consumption of education, housing, and health[12].

Table 3 shows the impact of more remittances, depending on which households receive them; rural households or urban households. In the table, the welfare change for the rural and urban households are separately measured by the equivalent variation (EV). The total impact on the whole economy is measured by GDP.

As Table 3 shows, while more remittances to the rural households improve income inequality, the magnitude of the impact is rather limited. Thus, in the following simulations, only the case when the urban households receive more remittances is investigated. In such a case, more remittances to the urban households result in more severe income inequality with higher GDP. For instance, if remittances to the urban households increase by 30%, then GDP is expected to increase by 4.7163%, but the Gini Coefficient increases from the current level of 39.4 to 50.58, which corresponds to a 28.372% increase in income inequality from the current level.

Note that a surplus for the government is also generated by more remittances, since more remittances stimulate an economy, thus, eventuating in more tax revenue even if the tax system remains unchanged, as long as the government maintains its expenditure level. This is because taxable income and production increases in a stimulated economy. For instance, when remittances to the urban households increase by 30%, then the government can obtain a new government surplus of 35.188 million US dollars. This implies that the government can modify the current tax rates without considering more tax revenue. In particular, the government can increase direct transfers to households, and/or reduce several tax rates in order to improve efficiency and equity. The government can even increase its expenditure without trying to obtain new revenue when inflows of more remittances stimulate an economy. Table 3 shows the impact of more remittances on tax revenue.

Before moving onto the next section, it should be noted that more remittances to the urban households result in an increase in welfare not only of the urban households but also

[12]Dadson and Kato (2015) substantially investigated the impact of remittances and the brain drain to the Ghanaian economy. See Dadson and Kato (2015) for more cases.

of the rural households. For instance, when remittances to the urban households increase by 30%, then welfare of the rural households also increase by 0.3092 million US dollars. This is because increased remittances to the urban households stimulate consumption of the urban households, and their expanded consumption stimulates production. The stimulated production then eventuates in more income of the rural households as well, and welfare of the rural households increases. Such an impact can be captured only by a general equilibrium framework, and in the following simulations regarding several tax policies it is assumed that only urban households receive more international remittances.

4.1 The Direct Income Transfers (Simulation I)

The Ghanaian government provides both the rural and urban households with direct transfers. The total amount of direct transfers to the rural and urban households reaches 251.1135 million US dollars, and 272.4138 million US dollars, respectively. In Simulation I, a surplus generated by the stimulation impact of more remittances to the urban households is used to increase direct transfers to either the rural or urban households until the surplus vanishes. Note that an increase in direct transfers changes the optimal consumption behavior, thus resulting in changes in consumption, income, production, and tax revenue through different channels. Note also that tax revenue with each tax changes without any change in the tax rate, and also that the government consumption changes even when the surplus vanishes again. The general equilibrium framework can capture the overall impact of a policy change on the behavior of all economic agents. Table 4 shows the results,which are summarized as follows: First of all, the government can increase direct transfers to each household when remittances to the urban households increases. For instance, the government can increase direct transfers to either rural or urban households by 10.411% or 7.140%, respectively when remittances to the urban households increase by 30%. This is because more remittances to the urban households induce an expansion of taxable income and production, thus resulting in additional tax revenue of 35.188 million US dollars. Secondly, more direct transfers only to the rural households result in not only better outcome for income inequality, but also for efficiency. While an economy (GDP) expands only by 1.5348% when a government surplus is used for more direct transfers only to the urban households when remittances to the urban households increase by 30%, an economy expands by 2.08% when the same surplus is used for more direct transfers to the rural households. This surprising result can be explained as follows: More direct transfers to the rural households strongly stimulate consumption of the rural households. This strong impact on the demand by the rural households results in stimulating production substantially, and then income of the urban households also increases. As Agbola (2013) pointed out, the impact through the demand side seems very strong in Ghana. Through its strong impact on the demand side, the direct transfers to the rural households result in a better outcome in terms of welfare, and such a policy is justified not only by equity, but also by efficiency. Finally, regarding the impact on savings, more direct transfers to the rural households make the rural households save more. This implies that the long-run effect reduces income inequality over time through the wealth effect under such a policy. A smaller gap in savings between the rural and urban households results in a smaller gap in their wealth, which eventuates in less income inequality in the future.

4.2 The Reduction of a Production Tax (Simulation II)

While the number of private sectors which pay a production (sales) tax is still limited in Ghana, the amount of a production tax paid is quite biased. Only the top three sectors ('Petroleum', 'Diesel', and 'Trade Services') consist of nearly 60% of all production tax revenue, and the average tax rate of a production tax applied to 'Petroleum', 'Diesel', and 'Trade Services' sectors reaches 62.968%, 57.321%, and 16.047%, respectively. The reduction of such very high and thus distortionary tax rates of these three sectors is simulated in this section (Simulation II).

The results are shown in Table 5. First of all, the magnitude of the impact on efficiency is rather limited. When remittances to the urban households increase by 30%, the distortionary tax rate can be reduced by 6.26%, 8.729%, and 10.279% from the current level for the 'Petroleum', 'Diesel', and 'Trade Services' sectors, respectively. However, the impact on the improvement in efficiency (GDP) is unexpectedly quite small for all cases. This is because the price elasticity in these three sectors seems quite small, so that the reduction of a production tax rate has little impact on the Ghanaian economy. Secondly, the impact on welfare is quite small and similar to both the rural and urban households. Finally, the magnitude of the impact on income inequality is also small, while the reduction of a production tax on all these three sectors result in a slight improvement in income inequality.

The above findings suggest that any tax policy to affect the supply side has relatively little impact on both efficiency and equity in Ghana. Then, the next section is devoted to investigate another tax to affect the supply side.

4.3 The Reduction of an Export Tax (Simulation III)

Among all 59 different sectors, only the 'Cocoa Beans (Sector number = 18)' sector pays an export tax in Ghana. This is because the 'Cocoa Beans' sector has been very important for the Ghanaian government to obtain stable government revenue by imposing an export tax on its exports. Since an export tax is another distortionary tax and the 'Cocoa Bean's sector plays an important role in the Ghanaian economy, the reduction of the export tax rate is expected to improve efficiency. If the government can maintain its stable revenue even after the reduction of the tax rate of the export tax, then the reduction of the tax rate could be justified.

Table 6 shows the results. First of all, when remittances to the urban households increase by 30%, then the government can reduce its rate from the current level of 14.196% to 11.3652%, which reduction rate from the current level corresponds to nearly 20%. Secondly the reduction of the export tax rate results in the improvement in not only efficiency (GDP) but also in equity (Gini Coefficient). Finally, the magnitude of the positive impact on efficiency and equity to the whole economy is larger than the case when any of production tax rate of the top three sectors is reduced. Note that the 'Cocoa Beans' sector has been playing an important role in Ghana, not only in its contribution to the government revenue, but also to income of households. Then, the following section investigates the impact of an introduction of subsidies to production, particularly to the sectors which contribute relatively more to income of the rural households, including the 'Cocoa Beans' sector.

4.4 An Introduction of Subsidies (Simulation IV)

The above result showed that the magnitude of the positive impact of the reduction of the export tax on the 'Cocoa Beans' sector on both efficiency and equity is larger than the case when a very high and distortionary production tax is reduced. This implies that the price elasticities of these sectors such as the 'Petroleum', 'Diesel', and 'Trade Services' sectors are very small even though their tax rates are already very high. This finding suggests the reduction of a production tax rate of other sectors. Furthermore, if the government is trying to achieve the improvement in both efficiency and equity, the sectors should be selected particularly based on income of the rural households. The result of Simulation I also suggests that if income of the rural households increase by any tax policy change, then increased income of the rural households also result in an expansion of an economy by its strong stimulation impact on the demand side.

Then our SAM based on the latest Input-Output Table of Ghana of year 2005 indicates the following three sectors to be explored; 'Cocoa Beans', 'Vegetables', and 'Yams' sectors. These three sectors pay relatively more income to the rural households, and the rural households consume more these goods compared to the urban households. However, any of these three sectors has not paid a production tax. Then in this section, subsidies to their production is introduced. Subsidies to production implies a negative tax rate of the production tax.

Table 7 shows the results. In Table 7, the amount of subsidies to each sector is shown when a surplus in the government budget is generated by more remittances to the urban households. First of all, an introduction of subsidies, namely a negative production tax rate for these sectors, results in better outcome in efficiency and equity compared to the case of the reduction of a production tax rate of the top three sectors of 'Petroleum', 'Diesel', and 'Trade Services' sectors. This is because the price elasticities of the 'Cocoa Beans', 'Vegetables', and 'Yams' sectors are much higher. Secondly, an introduction of subsidies to production of the 'Cocoa Beans' sector results in the best outcome out of these sectors. When the urban households receive more remittances by 30%, for instance, then the government can subsidy the 'Cocoa Beans' sector by 27.3223 million US dollars, and such subsidies result in the substantial improvement in efficiency and equity. When the government uses its surplus for the reduction of an export tax on the 'Cocoa Beans' sector, efficiency and equity improve by 1.9268% and 0.8443% from the current level, respectively. On the other hand, when the government uses the surplus to subsidy production of the sector, then efficiency and equity improve by 2.0468% and 3.4824%, respectively. In particular equity could be improved more by an introduction of subsidies. This is because subsidies to production positively work not only for exports but also for production of goods domestically consumed. The positive impact on goods domestically consumed induces the stimulation effect on the Ghanaian economy.

4.5 More Government Expenditure (Simulation V)

While the above result indicates that the 'Cocoa Beans' sector is one of the key sectors if the government tries to improve efficiency and equity through its impact on the supply side, the results obtained in previous sections also show that the magnitude of the impact on the demand side is much larger. Agbola (2013) pointed out that the impact through the demand side is particularly strong in Ghana. He also mentioned that the government should spend more money on the sectors such as education and health to stimulate the Ghanaian economy. This final section then simulates the case when the government uses a surplus for its consumption of education and health.

Table 8 shows the simulation results. The benchmark levels of government expenditure on education and health are 289.2981 million US dollars and 56.7430 million US dollars, respectively. Since the amount of government expenditure on health at the benchmark level is much smaller than education, an increase in government expenditure on health is much higher in each scenario. The first finding is that the impact on efficiency and equity is quite similar in both education and health, while the amount of an increase in expenditure is quite different. Secondly, the impact on income equality in both cases is quite limited, and income inequality does not improve so much. Thirdly, however, the impact on efficiency is quite large in both cases. Since more government expenditure directly stimulates the economy through the demand side effect, a big expansion of the Ghanaian economy is achieved. Finally, while the impact on efficiency is quite large, the distribution of the benefits generated by the policy is different from other cases. While GDP expands, the improvement in welfare of both rural and urban households is limited. Furthermore, increases in the amount of taxes paid by the rural and urban households are much higher in this simulation. This implies that the improvement in efficiency relatively more tributes to the government rather than an increase in income of households, while the Ghanaian economy can enjoy benefits most as a whole, when a surplus is used for more government expenditure.

4.6 An Overall Evaluation

This section summarizes the results obtained in the above sections. First of all, regarding the impact on income inequality, direct transfers to the rural households result in the best outcome. Secondly, direct transfers to the rural households also results in the improvement in efficiency as well. This is because the impact on the demand side is very strong in Ghana, and increased income of the rural households by more direct transfers to them results in production being stimulated. Such a stimulation effect eventuates in the Ghanaian economy to be expanded. An expansion of the direct transfers to the rural households induces the improvement in not only equity but also efficiency in Ghana. The improvement in efficiency is obtained by the strong impact of a policy change on the demand side. Thirdly, if the government tries to improve efficiency and equity by a tax policy to affect the supply side of the economy, then an introduction of subsidies to production of the 'Cocoa Beans' sector results in the best outcome among all supply side tax policies. Fourthly, the impact through the supply side seems relatively small than through the demand side. if the magnitude of the impact on efficiency is considered, however, more government expenditure on education or health is more efficient than the case of direct transfers to the rural households. This is because the stimulation on the demand side is quite strong in Ghana, and more government expenditure on education or health directly stimulates the economy, thus resulting in a more expansion of the economy. Finally, while the impact on efficiency is the largest when a surplus is used for more government spending on education or health, the distribution of increased efficiency is quite different between the case of more government spending and the case of more direct transfers to the rural households. When the government uses a surplus for more spending on education or health, increased efficiency is used for the government relatively more than the case when it is used for more direct transfers to the rural households. This implies that the distribution of efficiency gain between the government and the private sectors differs among policies. If the government is willing to enjoy more revenue, then it can spend more money on government spending with a slight improvement in equity. On the other hand, if the government puts more weight on the improvement in equity, then the government should spend more money on the direct transfers to the rural households.

Note again that in any policy the government can improve both efficiency and equity from the current level when more remittances generates a surplus in the government budget, by using the surplus for several tax policies without searching new tax revenue.

5 Concluding Remarks

This paper has presented a computable general equilibrium (CGE) framework to numerically examine the impact of several tax policies on economic growth and income inequality in Ghana. This paper has used the latest Input-Output table of Ghana of year 2005 with 59 different production sectors to reproduce the actual Ghanaian economy within the model.

The results obtained in this paper are as follows: First of all, increased international remittances induce a government surplus due to the fact that an increase in remittances stimulates an economy, thus resulting in an expansion of taxable income and production, as long as the government expenditure remains unchanged. Secondly, the government can improve both efficiency and equity by using the surplus without additional tax revenue. Thirdly, while the government can improve both efficiency and equity, there is a trade-off between efficiency and equity among tax policies. Fourthly, if the government is concerned more about equity, then a surplus used for more direct transfers to the rural households results in the best outcome in terms of equity. Fifthly, such a policy also results in the improvement in efficiency. This is because increased direct transfers stimulate consumption of the rural households, and thus more income of all sectors. Welfare of not only rural but also urban households improves by such a policy through its strong stimulation effect on the demand side. As Agbola (2013) pointed out, our simulation result also indicates that the Ghanaian economy is driven by its strong effect on the demand side. Sixthly, while the impact of a tax policy through the supply side of the economy is relatively smaller than that through the demand side, an introduction of subsidies to production of the 'Cocoa Beans' sector results in the best outcome for the improvement in efficiency and equity among all supply side tax policies. Seventhly, if the government is concerned only about efficiency, then, a policy to use a surplus for more government spending on education or health sector achieves the highest efficiency through its direct demand effect. Under such a policy, the positive impact on equity is limited. Finally, while such a policy to use a surplus for more government spending on education or health results in the best achievement in efficiency, the distribution of efficiency gain between the government and the private sectors differs between the case of more direct transfers to the rural households and the case of more government spending on education or health. While the Ghanaian economy can enjoy the largest benefits in improved efficiency as a whole when a surplus is used for more government spending, increased efficiency gain will be more distributed to the government sector in comparison with the case when a surplus is used for more direct transfers to the rural households. While a tax policy to provide the rural households with more direct transfers induces the second best outcome in terms of efficiency, it achieves the best outcome in terms of equity, so that both rural and urban households can enjoy the highest welfare. In this case, efficiency gain is more distributed to the private sector.

Finally drawbacks of this paper should be mentioned: Since utility is defined only over consumption and the optimal labor-leisure choice is not considered, the model cannot capture the overall impact of taxation. In particular, if the impact of taxation on efficiency and equity is considered, then the assumption of inelasitce labor supply would be inappropriate. Furthermore, while it is conventional in the literature, the optimal behavior regarding savings is not properly taken into account in the model. Thus, the impact on savings is not perfectly captured with this model.

However, by using the latest Input-Output Table of Ghana, this paper has developed a well-fitted benchmark model within a CGE framework, and it has numerically argued the impact of several tax policies for the improvement in efficiency and equity within a theoretical framework. It has also taken into account a key issue in the literature; behavioral changes towards remittances. Since the benchmark model has successfully reproduced the real Ghanaian economy within the model, the numerical results also seem realistic.

References

[1] Acosta, Pablo, C Calderon, P Fajnzylber, and H Lopez (2008), 'What is the Impact of International Remittances on Poverty and Inequality in Latin America?,' *World Development, Vol. 36 (1)*, pp. 89 - 114

[2] Adams, Richard H Jr (2009), 'The Determinants of International remittances in Developing Countries,' *World Development, Vol. 37, No. 1*, pp. 93 - 103

[3] Adams, Richard H Jr (2011), 'Evaluating the Economic Impact of International Remittances on Developing Countries Using Household Surveys: A Literature Review,' *Journal of Development Studies, Vol. 47, No. 6*, pp. 809 - 828

[4] Adams, Richard H Jr, and A Cuecuecha (2010), 'Remittances, Household Expenditure and Investment in Guatemala,' *World Development, Vol. 38*, pp. 1626 - 1641

[5] Adams, Richard H Jr, and A Cuecuecha (2013), 'The Impact of Remittances on Investment and Poverty in Ghana,' *World Development, Vol. 50*, pp. 24 - 40

[6] Adams, Richard H Jr, and J Page (2005), 'Do International Migration and Remittances Reduce Poverty in Developing Countries?,' *World Development, Vol. 33*, pp. 1645 - 1669

[7] Agbola, Frank Wogbe (2013), 'Does Human Capital Constrain the Impact of Foreign Direct Investment and Remittances on Economic Growth in Ghana?,' *Applied Economics, 45*, pp. 2853 - 2862

[8] Auerbach, Alan J and L J Kotlikoff (1987), *Dynamic Fiscal Policy*, Cambridge University Press

[9] Ballard, Charles L, D Fullerton, J B Shoven, and J Whalley (1985), *A General Equilibrium Model for Tax Policy Evaluation*, Chicago University Press

[10] Barham, Bradford, and S Boucher (1998), 'Migration, Remittances, and Inequality: Estimating the Net effects of Migration on Income Distribution,' *Journal of Development Economics, Vol. 55*, pp. 307 - 331

[11] Dadson, Isaac, and R R Kato (2015), 'Remittances and the Brain Drain in Ghana: A Computable General Equilibrium Approach, *EMS-2015-04, Economics and Management Series*, IUJ Research Institute, International University of Japan

[12] Djiofack, Calvin Z, E W Djimeu, and M Boussichas (2013), 'Impact of Qualified Worker Emigration on Poverty: A Macro-Micro-Simulation Approach for an African Economy,' *Journal of African Economies, Vol. 23, No.1*, pp. 1 - 52

[13] Faini, Riccardo (2007), 'Remittances and the Brain Drain: Do More Skilled Migrants Remit More?,' *The World Bank Economic Review, Vol. 21, No.2*, pp. 177 - 191

[14] Freund, Caroline and N Spatafora (2008), 'Remittances, Transaction costs, and Informality,' *Journal of Development Economics, Vol. 86*, pp. 356 - 366

[15] Ghana Statistical Service (2014), 'Poverty Profile in Ghana,' Ghana Living Standards Survey Round 6 (GLSS 6)

[16] Guha, Puja (2013), 'Macroeconomic Effects of International Remittances: The Case of Developing Countries,' *Economic Modelling, Vol. 33*, pp. 292 - 305

[17] Gupta, Sanjeev, C A Pattillo, and S Wagh (2009), 'Effect of Remittances on Poverty and Financial Development in Sub-Saharan Africa, *World Development, Vol. 37, No. 1*, pp. 104 - 115

[18] Hosoe, Nobuhiko, K Ogawa, and H Hashimoto (2010), *Textbook of Computable General Equilibrium Modeling*, Palgrave

[19] Ihori, Toshihiro, R R Kato, M Kawade, and S Bessho (2006), 'Public Debt and Economic Growth in an Aging Japan,' in *Tackling Japan's Fiscal Challenges*, eds by Keimei Kaizuka and Anne O. Krueger, Palgrave

[20] Ihori, Toshihiro, R R Kato, M Kawade, and S Bessho (2011), 'Health Insurance Reform and Economic Growth: Simulation Analysis in Japan,' *Japan and the World Economy, Vol. 23 (4)*, pp. 227-239

[21] Kabki, Mirjam, V Mazzucato, and E Appiah (2004), 'The Economic Impact of Remittances of Netherlands-Based Ghanaian Migrants on Rural Ashanti,' *Population, Space and Place, Vol. 10*, pp. 85 - 97

[22] Kato, Ryuta Ray (1998), 'Transition to an Aging Japan: Public Pension, Savings and Capital Taxation,' *Journal of the Japanese and International Economies 12*, pp. 204-231

[23] Kato, Ryuta Ray (2002a), 'Government Deficits in an Aging Japan,' Chapter 5 in *Government Deficit and Fiscal Reform in Japan*, eds by Ihori and Sato, Kluwer Academic Publishers

[24] Kato, Ryuta Ray (2002b), 'Government Deficit, Public Investment, and Public Capital in the Transition to an Aging Japan,' *Journal of the Japanese and International Economies, 16 (4)*, pp. 462-491

[25] Lipsey, R G, and K Lancaster (1956), 'The General Theory of Second Best,' *The Review of Economic Studies, Vol. 24 (1)*, pp. 11-32

[26] Lipton, Michael (1980), 'Migration from Rural Areas of Poor Countries: The Impact on Rural Productivity and Income Distribution,' *World Development, Vol. 8*, pp. 1 - 24

[27] Mamun, A, K Sohag, G S Uddin, and M Shahbaz (2015), 'Remittance and Domestic Labor Productivity: Evidence from Remittance Recipient Countries,' *Economic Modelling, Vol. 47*, pp. 207 - 218

[28] Mckenzie, David, and H Rapoport (2007), 'Network Effects and the Dynamics of Migration and Inequality: Theory and Evidence from Mexico,' *Journal of Development Economics, Vol. 84*, pp. 1 - 24

[29] Rapoport, Hillel, and F Docquier (2006), 'The Economics of Migrants' Remittances,' Chapter 17, in Handbook of the Economics of Giving, *Altruism and Reciprocity, Vol. 2*, pp. 1135 - 1198

[30] Scarf, H E, and J B Shoven (2008), *Applied General Equilibrium Analysis*, Cambridge University Press

[31] Shoven, John B, and J Whalley (1992), *Applying General Equilibrium*, Cambridge University Press

[32] Stark, Oded, J E Taylor, and S Yitzhaki (1988), 'Migration, Remittances and Inequality: A Sensitivity Analysis Using the Extended Gini Index,' *Journal of Development Economics, Vol. 28*, pp. 309 - 22

[33] Taylor, J Edward (1992), 'Remittances and Inequality Reconsidered: Direct, Indirect, and Intertemporal Effects,' *Journal of Policy Modeling, Vol. 14, No. 2*, pp. 187 - 208

[34] World Bank (2006), 'Global Economic Prospects: Economic Implications of Remittances and Migration,' pp. 1 - 182

[35] World Bank (2015), 'Remittances growth to slow sharply in 2015, as Europe and Russia stay weak; pick up expected next year,' World Bank, http://www.worldbank.org/en/news/press-release/2015/04/13/remittances-growth-to-slow-sharply-in-2015-as-europe-and-russia-stay-weak-pick-up-expected-next-year

Appendix 1: Model

The computable general equilibrium model of this paper employs the conventional static model[13]. The Ghanaian economy is assumed to consist of 59 different production sectors, two different types of households, the government, and the investment firm sector. All 59 industries are allowed to have intermediate production processes, and they are assumed to maximize their profit. Each production sector employes 6 factors in its production; self-employed labor (Ls), unskilled employed labor ($Lusk$), skilled employed labor (Lsk), capital specific for agriculture (Ka), general capital (Kn), and land (La). households are divided into two groups based on their living place indexed by h; the household living in the rural area ($h = a$) and the household living in the urban area ($h = b$). While households in different areas are different, households living in the same area are assumed to be identical. The household is assumed to maximize his/her utility over 59 different consumption goods.

The government is assumed to determine its tax revenue, its imports, its exports, income transfers to households, and its consumption in order to satisfy its budget constraint. The economy is assumed to be fully competitive, so that all prices are determined in the relevant markets in order to equate the amount of demand to the amount of supply at its fully competitive price level in equilibrium. Note that the model is static and thus the short-run effect is only investigated. Thus, it is assumed for simplicity that factor inputs are not mobile among different sectors in the short-run. All parameter values are presented in Table 6.

<household>

[13] In terms of the conventional static model, see Ballard et al (1985), Shoven and Whalley (1992), and Scarf and Shoven (2008). In particular, the model used in this paper is similar to Hosoe et al (2004). Regarding the dynamic model, it is conventional to employ an overlapping generations model In terms of computable overlapping generations model within a general equilibrium framework, see Auerbach and Kotlikoff (1987). Kato (1998, 2002a, 2002b), and Ihori et al (2006, 2011) also apply the dyanamic model to several policies in Japan.

Utility of the household indexed by h based on his/her living area is given by:

$$U^h\left(X_1^h, X_2^h, \cdots, X_{59}^h\right) = \alpha_i^h \sum_{i=1}^{59} \log\left(X_i^h\right); \qquad (1)$$
$$h = a, b,$$

where X_i^h denotes consumption of good i consumed by type h. $\sum_{i=1}^{59} \alpha_i^h = 1$ is assumed for both types of h $(= a$ and $b)$.

The household of type h is assumed to maximize (1) with respect to her/his consumption goods subject to her/his budget constraint such that:

$$\sum_{i=1}^{59} p_i X_i^h = B^h = I^h - S_p^h; \quad h = a, b$$

where p_i and I^h denote the price of good i and disposal income of type h, respectively. S_p^h denotes the total amount of savings, and the household is assumed to save the constant amount relative to her/his disposal income such that:

$$S_p^h = s_p^h I^h; \quad h = a, b$$

where the constant ratio, s_p^h, or the private saving rate, is given exogenously[14]. The value of s_p^h has been calculated by using the actual SAM. Then disposal income is given by

$$\begin{aligned} I^h &= GTrans^h + Trans^h + Rm^h \\ &+ \sum_{j=1}^{59} \left\{ \begin{array}{c} (1-\tau_r^a)\, r_j^a \overline{Ka}_j^h + (1-\tau_r^n)\, r_j^n \overline{Kn}_j^h + (1-\tau_w^s)\, w_j^s \overline{Ls}_j^h \\ + (1-\tau_w^{us})\, w_j^{us} \overline{Lusk}_j^h + + \left(1-\tau_w^{sk}\right) w_j^{sk} \overline{Lsk}_j^h + (1-\tau_L)\, LP_j \overline{La}_j^h \end{array} \right\}, \\ h &= a, b \end{aligned}$$

[14]The assumption that the ratio is exogenously given is made only for the model to be consistent to the actual social accounting matrix, and this assumption is very common in the literature.

where $GTrans^h, Trans^h$, and Rm^h denote the government income transfers, net income transfers from the other type of the household, and the remittance sent from the rest of the world, respectively[15]. r_j^a, and r_j^n, denote the rental cost of capital specific for agriculture (Ka), and general capital (Kn) in sector $j\ (= 1, 2, \cdots, 59)$, respectively. w_j^s, w_j^{us} and w_j^{sk} denote the wage rate of self-employed labor (Ls), unskilled employed labor $(Lusk)$, and skilled employed labor (Lsk) employed in sector $j\ (= 1, 2, \cdots, 59)$, respectively. LP_j denotes the unit price of land (La). Each type is assumed to have endowments of $\overline{Ka}_j^h, \overline{Kn}_j^h, \overline{Ls}_j^h, \overline{Lusk}_j^h, \overline{Lsk}_j^h$, and $\overline{La}_j^h$ in sector $j\ (= 1, 2, \cdots, 59)$. Both types are also assumed to pay taxes, and $\tau_r^a, \tau_r^n, \tau_w^s, \tau_w^{us}, \tau_w^{sk}$, and τ_L denote the capital income tax rate for agriculture, the capital income tax rate for others, the wage income tax rate for self-employed worker, the wage income tax rate for unskilled employed worker, the wage income tax rate for skilled employed worker, and the land tax rate, respectively. Note that all taxes are assumed to be proportional, and the tax rates have been calculated by using the actual social accounting matrix. The tax rate can be negative in the simulations if the effect of the case when the government subsidizes a particular factor input is explored. Note also that all factors are assumed to be immobile between different production sectors by assumption. The value of factor payments can be obtained from the actual social accounting matrix[16].

The first order conditions yield the demand functions such that:

$$X_i^h = X_i^h \left(\widetilde{p}, r_j^a, r_j^n, w_j^s, w_j^{us}, w_j^{sk}, LP_j; \tau_r^a, \tau_r^n, \tau_w^s, \tau_w^{us}, \tau_w^{sk}, \tau_L\right) \tag{2a}$$

$$= \frac{\alpha_i^h I^h \left(1 - s_p^h\right)}{p_i}, \tag{2b}$$

$$i = 1, 2, \cdots, 59, \quad h = a, b \tag{2c}$$

[15] Preciously speaking, $Trans^h$ also includes self-consumption within the same group.

[16] The total number of self-employed as well as employed workers in each production sector can be obtained from the IO table of year 2005. Since per capita wage income of employed workers and total wage income can also be obtained from the IO table of year 2005, $w_{j,h}L_h^j$ can be calculated for both $h = sw$ and $h = ew$. On $r_{j,h}\overline{K}_h^j$, the ratio of the number of each type of workers has simply been used to divide the total capital income of each production sector.

where $\widetilde{p} = (p_1, p_2, \cdots, p_{59})$. Note that α_i^h can be calculated by using (2b) and the actual social accounting matrix so that:

$$\alpha_i^h = \frac{p_i X_i^h}{I^h \left(1 - s_p^h\right)}; \quad h = a, b$$

where both the values of the denominator and the numerator can be obtained from the actual social accounting matrix.

<Production Sector>

Following the conventional assumption, the multiple decisions by each firm are described by the tree structure, where each firm is assumed to make a decision over several different items. In the tree structure, the optimal behavior of each firm which makes a decision over different items is described as if the firm always makes a decision over two different items at different steps. Each firm makes a decision over different items; exports of its own product, the amount of imported goods and intermediate goods used for its production, and labor and capital. This assumption simplifies a complicated decision over several items by each firm. Each step is also shown in Figure 3.

At step 1, a private firm, i, is assumed to use labor and capital to produce its composite goods, Y_i. Then, the firm is assumed to produce its domestic goods, Z_i, by using its own Y_i and $X_{i,k}$ at the second step. $X_{i,k}$ denotes the final consumption goods produced by firm k used by firm i for its production. Thus, $X_{i,k}$ is the amount of the final consumption goods produced by firm k for the intermediate production process of firm i. At the third step, the firm is assumed to decompose its domestic goods, Z_i, into exported goods, E_i, and final domestic goods, D_i. This step is concerned about its optimal decision over the amount of its product to be exported. At the final step (the fourth step), the firm is assumed to produce its final consumption goods, Q_i, by using its final domestic goods, D_i, and imported goods, M_i. This step corresponds to its optimal decision over how much it uses imported goods, M_i, and its own goods, D_i, to produce its final consumption goods, Q_i, which are consumed by domestic households. The assumption of this tree structure in terms of different decisions can incorporate firm's complicated decisions over exports of its own product, the amount of imported goods and intermediate goods which the firm uses in its production process, and the amount of factor inputs into the model in a tractable way.

Note that all market clearing conditions are used to determine all prices endogenously in their corresponding markets, and also that at each step the private firm is assumed to determine the amount of relevant variables in order to maximize its profit.

By the assumption of the above tree structure, all decision making processes can be simplified, and the optimal behavior about all different decisions can be incorporated as follows:

Step 1: The production of composite goods

Each firm is assumed to produce its composite goods by using capital and labor. Each firm is assumed to maximize its profit given by:

$$\begin{aligned}\pi_i &= p_i^Y Y_i\left(Ka_i, Kn_i, Ls_i, Lusk_i, Lsk_i, La_i\right) \\ &\quad - \sum_h \left(r_i^a Ka_i^h + r_i^n Kn_i^h + w_i^s Ls_i^h + w_i^{us} Lusk_i^h + w_i^{sk} Lsk_i^h + LP_i La_i^h\right), \qquad (3)\end{aligned}$$

where Y_i and p_i^Y denote the composite goods produced by firm i and its price, respectively. The production technology is given by:

$$Y_i\left(Ka_i, Kn_i, Ls_i, Lusk_i, Lsk_i, La_i\right) \qquad (4)$$

$$= Ka_i^{\beta_{Ka,i}} Kn_i^{\beta_{Kn,i}} Ls_i^{\beta_{Ls,i}} Lusk_i^{\beta_{Lusk,i}} Lsk_i^{\beta_{Lsk,i}} La_i^{\beta_{La,i}}, \qquad (5)$$

$$i = 1, 2, \cdots, 59, \qquad (6)$$

where $\beta_{Ka,i} + \beta_{Kn,i} + \beta_{Ls,i} + \beta_{Lusk,i} + \beta_{Lsk,i} + \beta_{La,i} = 1$ is assumed for all $i = 1, 2, \cdots, 59$. It is also assumed such that:

$$\sum_h Ka_i^h = Ka_i,\ \sum_h Kn_i^h = Kn_i,\ \sum_h Ls_i^h = Ls_i,$$
$$\sum_h Lusk_i^h = Lusk_i,\ \sum_h Lsk_i^h = Lsk_i,\ \sum_h La_i^h = La_i.$$

Each firm is assumed to maximize (3) with respect to labor and capital subject to (4), and the first order conditions yield the demand functions such that:

$$Ka_i = Ka_i\left(p_i^Y, r_i^a, r_i^n, w_i^s, w_i^{us}, w_i^{sk}, LP_i; \beta_{Ka,i}, \beta_{Kn,i}, \beta_{Ls,i}, \beta_{Lusk,i}, \beta_{Lsk,i}, \beta_{La,i}\right) \tag{7a}$$
$$= \frac{\beta_{Ka,i}}{r_i^a} p_i^Y Y_i, \tag{7b}$$
$$Kn_i = Kn_i\left(p_i^Y, r_i^a, r_i^n, w_i^s, w_i^{us}, w_i^{sk}, LP_i; \beta_{Ka,i}, \beta_{Kn,i}, \beta_{Ls,i}, \beta_{Lusk,i}, \beta_{Lsk,i}, \beta_{La,i}\right) \tag{7c}$$
$$= \frac{\beta_{Kn,i}}{r_i^n} p_i^Y Y_i, \tag{7d}$$
$$Ls_i = Ls_i\left(p_i^Y, r_i^a, r_i^n, w_i^s, w_i^{us}, w_i^{sk}, LP_i; \beta_{Ka,i}, \beta_{Kn,i}, \beta_{Ls,i}, \beta_{Lusk,i}, \beta_{Lsk,i}, \beta_{La,i}\right),$$
$$= \frac{\beta_{Ls,i}}{w_i^s} p_i^Y Y_i, \tag{7e}$$
$$Lusk_i = Lusk_i\left(p_i^Y, r_i^a, r_i^n, w_i^s, w_i^{us}, w_i^{sk}, LP_i; \beta_{Ka,i}, \beta_{Kn,i}, \beta_{Ls,i}, \beta_{Lusk,i}, \beta_{Lsk,i}, \beta_{La,i}\right), \tag{7f}$$
$$= \frac{\beta_{Lusk,i}}{w_i^{us}} p_i^Y Y_i, \tag{7g}$$
$$Lsk_i = Lsk_i\left(p_i^Y, r_i^a, r_i^n, w_i^s, w_i^{us}, w_i^{sk}, LP_i; \beta_{Ka,i}, \beta_{Kn,i}, \beta_{Ls,i}, \beta_{Lusk,i}, \beta_{Lsk,i}, \beta_{La,i}\right), \tag{7h}$$
$$= \frac{\beta_{Lsk,i}}{w_i^{sk}} p_i^Y Y_i, \tag{7i}$$
$$La_i = La_i\left(p_i^Y, r_i^a, r_i^n, w_i^s, w_i^{us}, w_i^{sk}, LP_i; \beta_{Ka,i}, \beta_{Kn,i}, \beta_{Ls,i}, \beta_{Lusk,i}, \beta_{Lsk,i}, \beta_{La,i}\right), \tag{7j}$$
$$= \frac{\beta_{La,i}}{LP_i} p_i^Y Y_i, \tag{7k}$$
$$i = 1, 2, \cdots, 59 \tag{7l}$$

Note that parameter values can be calculated by using from (7b) to (7k), and the actual social accounting matrix so that:

$$\beta_{Ka,i} = \frac{r_i^a Ka_{i,}}{p_i^Y Y_i},\ \beta_{Kn,i} = \frac{r_i^n Kn_{i,}}{p_i^Y Y_i},\ \beta_{Ls,i} = \frac{w_i^s Ls_i}{p_i^Y Y_i},$$
$$\beta_{Lusk,i} = \frac{w_i^{ys} Lusk_i}{p_i^Y Y_i},\ \beta_{Lsk,i} = \frac{w_i^{sk} Lsk_i}{p_i^Y Y_i},\ \beta_{La,i} = \frac{LP_i La_i}{p_i^Y Y_i},$$
$$i = 1, 2, \cdots, 59$$

The estimated values of $\beta_{K,i,h}$ and $\beta_{L,i,h}$ are given in Table 6.

Step 2: The production of domestic goods

Each firm is assumed to produce domestic goods, Z_i, by using intermediate goods and its own composite goods, which production has been described at step 1. The optimal behavior of each firm in terms of the production of domestic goods can be described such that:

$$\underset{Y_i, X_{i,j}}{Max}\ \pi_i = p_i^Z Z_i - \left(p_i^Y Y_i - \sum_k^{59} p_k^X X_{i,k} \right),$$
$$st \quad Z_i = \min\left(\frac{X_{i,k}}{ax_{i,k}}, \frac{Y_i}{ay_i} \right),\ i = 1, 2, \cdots, 59,$$

where $X_{i,k}$ and p_k^X denote intermediate good k used by firm i and its price, respectively. p_i^Z is the price of Z_i. $ax_{i,k}$ denotes the amount of intermediate good k used for producing one unit of a domestic good of firm i , and ay_i denotes the amount of its own composite good for producing one unit of its domestic good. The estimated values of ay_i are given in Table 5-2[17]. Note that the production function at this step is assumed to be the Leontief type. Using $ax_{i,k}$ and ay_i, and assuming that the market is fully competitive, the zero-profit condition can be written by:

$$p_i^Z = p_i^Y ay_i + \sum_k^{59} p_k^X ax_{i,k},\ i = 1, 2, \cdots, 59.$$

Step 3: Decomposition of Domestic Goods into Exported Goods and Final

[17]The estimated values of $ax_{i,k}$ are not presented in Table 5-2, since the number of $ax_{i,k}$ reaches 11,449. The estimated values are given upon request.

Domestic Goods

The optimal decision made by firm i in terms of the amount of exports of its own goods is described as the the decomposition of Z_i ($i = 1, 2, \cdots, 59$) into exported goods, E_i, and final domestic goods, D_i. Each firm is assumed to maximize its profit such that:

$$\pi_i = p_i^e \left(1 - \tau_i^e\right) E_i + p_i^d D_i - \left(1 + \tau_i^p\right) p_i^Z Z_i, \tag{8}$$

where p_i^e and p_i^d denote the price when the domestic goods are sold abroad, and the price when the domestic goods are sold domestically, respectively. Note that p_i^e is measured in the domestic currency. τ_i^p and τ_i^e are the tax rates of a production tax imposed on the production of Z_i, and the tax rate on exports, respectively. The values of τ_i^p and τ_i^e are calculated by using the actual social accounting matrix, and the calculated values are given in Table 2-1 and 2-2. The decomposition is assumed to follow the Cobb-Douglas technology[18] such that:

$$Z_i = E_i^{\kappa_i^e} D_i^{\kappa_i^d}, \ i = 1, 2, \cdots, 59, \tag{9}$$

where $\kappa_i^d + \kappa_i^e = 1$ ($i = 1, 2, \cdots, 59$) is assumed. Each firm is assumed to maximize (8) with respect to E_i and D_i subject to (9), and the first order conditions yield

$$E_i = E_i \left(p_i^e, p_i^d, p_i^Z; \tau_i^p, \tau_i^s, \kappa_i^d, \kappa_i^e\right) = \frac{\kappa_i^e \left(1 + \tau_i^p\right) p_i^Z Z_i}{p_i^e \left(1 - \tau_i^e\right)}, \tag{10a}$$

$$D_i = D_i \left(p_i^e, p_i^d, p_i^Z; \tau_i^p, \tau_i^s, \kappa_i^d, \kappa_i^e\right) = \frac{\kappa_i^d \left(1 + \tau_i^p\right) p_i^Z Z_i}{p_i^d}, \ i = 1, 2, \cdots, 59. \tag{10b}$$

Note that κ_i^e and κ_i^d can be calculated by using (10a), (10b), and the actual social

[18] While it is common in the literature to assume (9) and (11) to be expressed by the CES technology, it is assumed in this paper that both technologies are expressed by the Cobb-Douglas technology. While the Cobb-Douglas function is the special case of the CES function and thus the CES function provides more generality, our assumption gives us more advantages in terms of preciseness of our benchmark model. As our benchmark results show, the assumption of the Cobb-Douglas technology substantially contributes to our perfectly well-fitted benchmark result. We believe that the benchmark model should be well-fitted to reproduce the actual economy within the model in any simulation anaylsis, and the Cobb-Douglas technology is assumed at the sacrifice of a certain level of genrerality, in order to obtain our perfectly well-fitted benchmark model.

accounting matrix so that:

$$\kappa_i^e = \frac{p_i^e (1-\tau_i^e) E_i}{(1+\tau_i^p) p_i^Z Z_i},$$
$$\kappa_i^d = \frac{p_i^d D_i}{(1+\tau_i^p) p_i^Z Z_i}, \ i = 1, 2, \cdots, 59,$$

where $p_i^e E_i$, $p_i^d D_i$, $p_i^Z Z_i$, $\tau_i^s p_i^Z Z_i$, and $\tau_i^e p_i^e E_i$ can be obtained from the actual social accounting matrix. The estimated values of κ_i^e and κ_i^d are given in Table 2.

Step 4: The Production of the final goods

Denote the final consumption goods by Q_i ($i = 1, 2, \cdots, 59$). The final consumption goods are assumed to be produced by using the final domestic goods, D_i, and the imported goods, M_i. This step corresponds to the optimal decision making behavior of each firm in terms of the amount of imported goods which are used in its production process. The production technology at this final step is given by the following Cobb-Douglas function:

$$Q_i = M_i^{\gamma_i^m} D_i^{\gamma_i^d}, \ i = 1, 2, \cdots, 59, \tag{11}$$

where $\gamma_i^m + \gamma_i^d = 1$ ($i = 1, 2, \cdots, 59$) is assumed. Each firm is assumed to maximize its profit with respect to M_i and D_i subject to (11). Its profit is given by:

$$\pi_i = p_i^Q Q_i - (1+\tau_i^m) p_i^m M_i - p_i^d D_i, \ i = 1, 2, \cdots, 59,$$

where p_i^Q and τ_i^m denote the price of its final consumption goods, Q_i, and the import tariff rate, respectively. The import tariff rate is calculated by using the actual social accounting matrix, and it is given in Table 2-4. Then, the first order conditions yield

$$M_i = M_i \left(p_i^m, p_i^d, p_i^Q; \tau_i^m, \gamma_i^m, \gamma_i^d \right) = \frac{\gamma_i^m p_i^Q Q_i}{(1+\tau_i^m) p_i^m}_i, \tag{12a}$$

$$D_i = D_i \left(p_i^m, p_i^d, p_i^Q; \tau_i^m, \gamma_i^m, \gamma_i^d \right) = \frac{\gamma_i^d p_i^Q Q_i}{p_i^d}, \ i = 1, 2, \cdots, 59. \tag{12b}$$

Note that γ_i^m and γ_i^d can be calculated by using (12a), (12b), and the actual social accounting matrix so that:

$$\gamma_i^m = \frac{(1+\tau_i^m)\, p_i^m M_i}{p_i^Q Q_i},$$
$$\gamma_i^d = \frac{p_i^d D_i}{p_i^Q Q_i},\ i = 1, 2, \cdots, 59,$$

where $p_i^m M_i$, $p_i^d D_i$, $p_i^Q Q_i$ and $\tau_i^m p_i^m M_i$ can be obtained from the actual social accounting matrix. The estimated values of γ_i^m and γ_i^d are given in Table 6.

<The Government>

The government is assumed to impose several taxes to satisfy its budget constraint. Its budget constraint is given by:

$$\sum_{i=1}^{59} p_i^Q X_i^g + S^g + Gimp + GTrans = T^I + T^p + T^m + T^e + Gex,$$

where the left hand side is the total government expenditure, and the right hand side is the total government revenue. X_i^g and S^g denote government consumption of final consumption good i, and government savings, respectively. $GTrans$ denotes the total amount of income transfers to both types of h such that:

$$GTrans = \sum_h GTrans^h.$$

$Gimp$ and Gex denote direct imports and exports by the government, respectively. The total tax revenue is given by:

$$
\begin{aligned}
T^I &= \sum_{i=1}^{59} \sum_h \left(\tau_w^s w_i^s Ls_i^h + \tau_w^{us} w_i^{us} Lusk_i^h + \tau_w^{sk} w_i^{sk} Lsk_i^h \right) \\
&\quad + \sum_{i=1}^{59} \sum_h \left(\tau_r^a r_i^a Ka_i^h + \tau_w^n r_i^n Kn_i^h \right), \\
T^L &= \sum_{i=1}^{59} \sum_h \left(\tau_L LP_i La_i^h \right), \\
T^p &= \sum_{i=1}^{59} \tau_i^p \left(p_i^Z Z_i \right), \\
T^m &= \sum_{i=1}^{59} \tau_i^m \left(p_i^m M_i \right), \\
T^e &= \sum_{i=1}^{59} \tau_i^e \left(p_i^e E_i \right)
\end{aligned}
$$

where T^I, T^L, T^p, T^m, and T^e denote the total income tax revenue, the total land tax revenue, the total production tax revenue, the total import tariff revenue, and the total export tax revenue, respectively. The government is assumed to save the constant amount relative to the total amount of tax revenue, and the government savings are assumed to be given by

$$S^g = s^g \left(T^I + T^p + T^m + Gex \right),$$

where the constant ratio, s^g, is given exogenously, and .its value has been calculated by using the actual SAM.

<**Equilibrium Conditions**>

There are two factor inputs, labour and capital. Since the model is static and thus the short-run effect is explored, it is assumed that each factor cannot move among different sectors (industries) in the short-run. This implies the equilibrium conditions of factor markets such that

$$\overline{Ka}_i^a + \overline{Ka}_i^b = Ka_i, \tag{13a}$$

$$\overline{Kn}_i^a + \overline{Kn}_i^b = Kn_i, \tag{13b}$$

$$\overline{Ls}_i^a + \overline{Ls}_i^b = Ls_i, \tag{13c}$$

$$\overline{Lusk}_i^a + \overline{Lusk}_i^b = Lusk_i \tag{13d}$$

$$\overline{Lsk}_i^a + \overline{Lsk}_i^b = Lsk_i \tag{13e}$$

$$\overline{La}_i^a + \overline{La}_i^b = La, \tag{13f}$$

$$i = 1, 2, \cdots, 59 \tag{13g}$$

Note that $r_i^a, r_i^n, w_i^s, w_i^{us}, w_i^{sk}$, and LP_i $(i = 1, 2, \cdots, 59)$ are determined in order to satisfy (13a) to (13f), respectively.

In terms of the market clearing condition of good i $(i = 1, 2, \cdots, 59)$, a private investment sector is introduced in order to close the economy in this paper[19]. Denoting the amount of good i consumed by the private investment sector by X_i^s, the market clearing condition of good i is given by:

$$Q_i = X_i^a + X_i^b + X_i^g + X_i^s + \sum_k^{59} X_{i,k}, \;\; i = 1, 2, \cdots, 59, \tag{14}$$

where the left hand side is the total supply, and the right hand side is the total demand for good i. p_i^Q $(i = 1, 2, \cdots, 59)$ is determined in order to satisfy (14). Note that the budget constraint of the private investment sector is given by:

$$\sum_{i=1}^{59} p_i^Q X_i^s = S^g + S_p^a + S_p^b + S^f,$$

where the left hand side is the total amount of its consumption, and the right hand side is the total amount of its income. S^f denotes the total amount of savings by the foreign sector,

[19]This is also the conventional assumption in the literature.

or the deficits in the current account, and it is given by subtracting exports from imports[20]. Since both the amount of exports and the amount of imports can be obtained from the actual social accounting matrix, S^f can be calculated from the actual social accounting matrix, and thus it is exogenously given in the model. Furthermore, the foreign trade balance is given by

$$\sum_{i=1}^{59} p_i^{w,e} E_i + S^f + Gex + \sum_h Rm^h = \sum_{i=1}^{59} p_i^{w,m} M_i + Gimp,$$

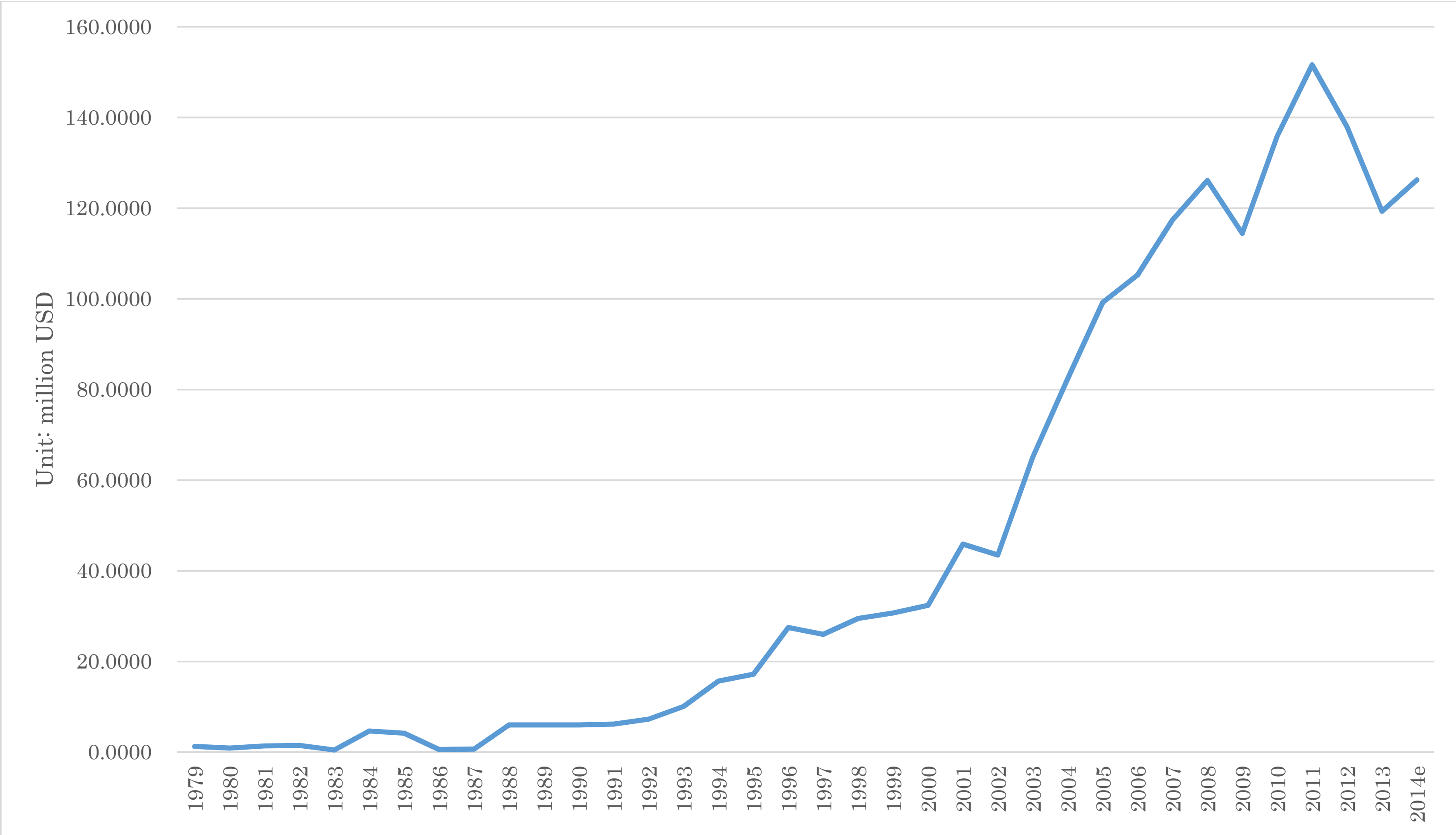
where $p_i^{w,e}$ and $p_i^{w,m}$ denote the world price of export goods, and import goods of good i, respectively, and both of them are assumed to be given exogenously. Since p_i^e and p_i^m are both measured in the domestic currency, they are also expressed such that:

$$p_i^e = \varepsilon p_i^{w,e},$$
$$p_i^m = \varepsilon p_i^{w,m}, \ i = 1, 2, \cdots, 59,$$

where ε denotes the exchange rate. Note that the exogeneity assumption on the world prices implies that the exchange rate is endogenously determined within the model.

[20]The FDI is assumed to be negiligible in this paper.

Figure 1: International Remittances



Data Source: World Bank

Table 1: International Remittances in year 2005 based on the IO Table year 2005

Unit: million USD

		Formal	Informal	Total
To	Rural houeholds	45.11181696	168.34958	213.46139
	Urban households	175.726162	655.77995	831.50611
	total	220.8379789	824.12952	1044.9675
		Per a million population		
To	Rural houeholds	3.268972244	12.199245	15.468217
	Urban households	20.91978119	78.069041	98.988822
	total	24.18875343	90.268286	114.45704

Source: Input-Output Table of Year 2005
The amout of informal remittances is obtained based on the assumption that the amount of exports in sector 51 is treated as informal international remittances

Table 2: Income and Population in year 2005

Income: in million USD, and Population in million

	Population	Income
Rural houeholds	13.8	5054.3708
Urban households	8.4	5850.3813
total	22.2	10904.752
	Per a million population	
Rural houeholds		366.25876
Urban households		423.94068
total		790.19943

Source: Input-Output Table Year 2005 and GLSS 5

Table 3: The Impact of Remittances

Unit: a million USD except Gini Coeffficient	benchmark	increase in remittances to the RURAL household only				increase in remittances to the URBAN household only			
		5% increase	10% increase	20% increase	30% increase	5% increase	10% increase	20% increase	30% increase
Tax Revenue									
income tax from rural household	88.7185	88.8055	88.9522	89.3304	89.7158	89.3113	90.0713	91.6599	93.2540
income tax from urban household	261.2955	261.7172	262.2794	263.5564	264.8426	263.4530	265.9488	271.1136	276.2775
production tax	1133.3940	1133.6839	1134.0920	1135.0740	1136.0685	1135.0481	1137.0312	1141.1597	1145.2923
export tax	119.8080	119.8080	119.8080	120.1122	120.4451	120.0792	120.7297	122.0764	123.4359
import tariff	387.6275	387.8899	388.4274	389.7278	391.0437	389.6774	392.2899	397.7353	403.1822
Government Deficits		-0.7378	-1.8884	-4.8383	-7.8391	-4.6771	-10.5896	-22.8809	-35.1880
Savings									
rural household	231.8894	232.0986	232.4515	233.3609	234.2878	233.3150	235.1426	238.9627	242.7960
urban household	138.6556	138.8329	139.0692	139.6059	140.1466	139.5625	140.6115	142.7824	144.9529
Welfare (Equivalent Variation)									
rural household	0.0000	0.0225	0.0479	0.1007	0.1497	0.0430	0.0968	0.2050	0.3092
urban household	0.0000	0.0077	0.0189	0.0439	0.0686	0.0820	0.1625	0.3084	0.4376
GDP	11429.3131	11443.1396	11461.8917	11507.2452	11553.1977	11504.2694	11594.1791	11781.1238	11968.3522
Gini Coefficient	39.40	38.88	38.31	37.06	35.82	41.55	43.45	47.10	50.58
		% increase from the benchmark value				% increase from the benchmark value			
		5% increase	10% increase	20% increase	30% increase	5% increase	10% increase	20% increase	30% increase
Tax Revenue									
income tax from rural household		0.0980%	0.2635%	0.6897%	1.1242%	0.6682%	1.5249%	3.3154%	5.1122%
income tax from urban household		0.1614%	0.3765%	0.8653%	1.3575%	0.8257%	1.7808%	3.7575%	5.7337%
production tax		0.0256%	0.0616%	0.1482%	0.2360%	0.1459%	0.3209%	0.6852%	1.0498%
export tax		0.0000%	0.0000%	0.2539%	0.5318%	0.2263%	0.7694%	1.8934%	3.0281%
import tariff		0.0677%	0.2063%	0.5418%	0.8813%	0.5288%	1.2028%	2.6076%	4.0128%
Savings									
rural household		0.0902%	0.2424%	0.6346%	1.0343%	0.6148%	1.4029%	3.0503%	4.7034%
urban household		0.1278%	0.2983%	0.6854%	1.0753%	0.6540%	1.4106%	2.9763%	4.5416%
GDP		0.1210%	0.2850%	0.6819%	1.0839%	0.6558%	1.4425%	3.0781%	4.7163%
Gini Coefficient		-1.3250%	-2.7760%	-5.9338%	-9.0825%	5.4444%	10.2910%	19.5457%	28.3720%

Source: Dadson and Kato (2015)

Table 4: The Impact of Direct Transfers to either Rural or Urban Households with Remittances to Urban Households (Simulation I)

Unit: a million USD except Gini Coeffficient	benchmark	increase in remittances to the URBAN household only			increase in remittances to the URBAN household with income transfers to the RURAL household			increase in remittances to the URBAN household with income transfers to the URBAN household		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue										
income tax from rural household	88.7185	90.0713	91.6599	93.2540	89.5331	90.3726	90.8048	89.2546	89.7535	90.2357
income tax from urban household	261.2955	265.9488	271.1136	276.2775	263.6450	266.1053	267.4438	262.9630	264.4442	265.8912
production tax	1133.3940	1137.0312	1141.1597	1145.2923	1135.5497	1137.7874	1138.9848	1134.8842	1136.2667	1137.5914
export tax	119.8080	120.7297	122.0764	123.4359	120.5830	121.2923	121.4528	120.1939	120.5388	120.9737
import tariff	387.6275	392.2899	397.7353	403.1822	391.7956	396.0886	398.4428	390.6957	393.2311	395.7142
Government Deficits		-10.5896	-22.8809	-35.1880	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Income Transfers to the RURAL Households	251.1135				261.3767	272.0493	277.2575			
Income Transfers to the URBAN Households	272.4138							279.4328	285.6610	291.8654
Savings										
rural household	231.8894	235.1426	238.9627	242.7960	234.3349	236.8594	238.1456	233.1785	234.3784	235.5378
urban household	138.6556	140.6115	142.7824	144.9529	139.6432	140.6773	141.2399	139.5284	140.3035	141.0636
Welfare (Equivalent Variation)										
rural household	0.0000	0.0968	0.2050	0.3092	0.0798	0.1615	0.2028	0.0437	0.0837	0.1223
urban household	0.0000	0.1625	0.3084	0.4376	0.0542	0.1103	0.1405	0.0468	0.0877	0.1275
GDP	11429.3131	11594.1791	11781.1238	11968.3522	11521.2568	11616.6176	11667.1330	11492.5049	11549.2833	11604.7332
Gini Coefficient	39.40	43.45	47.10	50.58	38.47	37.56	37.17	39.60	39.71	39.84
		% increase from the benchmark value			% increase from the benchmark value			% increase from the benchmark value		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue										
income tax from rural household		1.5249%	3.3154%	5.1122%	0.9182%	1.8644%	2.3516%	0.6042%	1.1666%	1.7101%
income tax from urban household		1.7808%	3.7575%	5.7337%	0.8992%	1.8407%	2.3530%	0.6381%	1.2050%	1.7588%
production tax		0.3209%	0.6852%	1.0498%	0.1902%	0.3876%	0.4933%	0.1315%	0.2535%	0.3703%
export tax		0.7694%	1.8934%	3.0281%	0.6468%	1.2389%	1.3728%	0.3221%	0.6099%	0.9729%
import tariff		1.2028%	2.6076%	4.0128%	1.0753%	2.1828%	2.7901%	0.7915%	1.4456%	2.0862%
Income Transfers to the RURAL Households					4.0871%	8.3372%	10.4112%			
Income Transfers to the URBAN Households								2.5766%	4.8629%	7.1404%
Savings										
rural household		1.4029%	3.0503%	4.7034%	1.0546%	2.1433%	2.6979%	0.5559%	1.0733%	1.5733%
urban household		1.4106%	2.9763%	4.5416%	0.7122%	1.4580%	1.8638%	0.6294%	1.1884%	1.7366%
GDP		1.4425%	3.0781%	4.7163%	0.8045%	1.6388%	2.0808%	0.5529%	1.0497%	1.5348%
Gini Coefficient		10.2910%	19.5457%	28.3720%	-2.3544%	-4.6684%	-5.6554%	0.5072%	0.7899%	1.1151%

Table 5: The Impact of the Reduction of a Production Tax with Remittances to Urban Households (Simulation II)

Unit: a million USD except Gini Coeffficient and Tax Rates	benchmark	increase in remittances to the URBAN household only			increase in remittances to the URBAN household with the reduction of the production tax on Sector 40 (Petroleum)			increase in remittances to the URBAN household with the reduction of the production tax on Sector 41(Diesel)			increase in remittances to the URBAN household with the reduction of the production tax on Sector 50 (Trade Services)		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue													
income tax from rural household	88.7185	90.0713	91.6599	93.2540	89.3371	89.9183	90.0265	89.3395	89.9300	90.0518	89.3826	90.0341	90.1405
income tax from urban household	261.2955	265.9488	271.1136	276.2775	263.2043	265.0430	265.4585	263.2126	265.0844	265.5451	263.3506	265.4370	265.8329
production tax	1133.3940	1137.0312	1141.1597	1145.2923	1126.9823	1121.1204	1119.8141	1126.9716	1121.0850	1119.6979	1126.7594	1120.2657	1118.8903
export tax	119.8080	120.7297	122.0764	123.4359	120.3851	120.8580	120.7703	120.3852	120.8588	120.7769	120.3948	120.8412	120.7791
import tariff	387.6275	392.2899	397.7353	403.1822	390.9129	393.9682	394.8066	390.9242	394.0373	394.9328	391.0071	394.3685	395.0836
Government Deficits		-10.5896	-22.8809	-35.1880	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Prduction Tax Rate on Sector 40 (Petroleum)	62.9687%				61.1097%	59.3998%	59.0268%						
Prduction Tax Rate on Sector 41(Diesel)	57.3219%							54.9834%	52.8213%	52.3180%			
rduction Tax Rate on Sector 50 (Trade Service	16.0479%										15.2879%	14.5486%	14.3982%
Savings													
rural household	231.8894	235.1426	238.9627	242.7960	233.3770	234.7746	235.0349	233.3828	234.8028	235.0956	233.4864	235.0533	235.3090
urban household	138.6556	140.6115	142.7824	144.9529	139.4579	140.2308	140.4054	139.4614	140.2482	140.4418	139.5194	140.3964	140.5628
Welfare (Equivalent Variation)													
rural household	0.0000	0.0968	0.2050	0.3092	0.0510	0.0993	0.1087	0.0506	0.0993	0.1097	0.0536	0.1066	0.1156
urban household	0.0000	0.1625	0.3084	0.4376	0.0464	0.0909	0.1011	0.0450	0.0890	0.0998	0.0475	0.0954	0.1047
GDP	11429.3131	11594.1791	11781.1238	11968.3522	11493.5902	11554.5792	11567.4602	11493.8660	11555.9727	11570.2553	11498.3350	11567.2589	11579.2264
Gini Coefficient	39.40	43.45	47.10	50.58	39.23	39.11	39.15	39.23	39.11	39.15	39.22	39.11	39.13
		% increase from the benchmark value			% increase from the benchmark value			% increase from the benchmark value			% increase from the benchmark value		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue													
income tax from rural household		1.5249%	3.3154%	5.1122%	0.6972%	1.3523%	1.4744%	0.7000%	1.3656%	1.5028%	0.7485%	1.4830%	1.6029%
income tax from urban household		1.7808%	3.7575%	5.7337%	0.7305%	1.4342%	1.5932%	0.7337%	1.4500%	1.6264%	0.7865%	1.5850%	1.7365%
production tax		0.3209%	0.6852%	1.0498%	-0.5657%	-1.0829%	-1.1982%	-0.5667%	-1.0860%	-1.2084%	-0.5854%	-1.1583%	-1.2797%
export tax		0.7694%	1.8934%	3.0281%	0.4817%	0.8764%	0.8032%	0.4818%	0.8771%	0.8087%	0.4898%	0.8624%	0.8106%
import tariff		1.2028%	2.6076%	4.0128%	0.8476%	1.6358%	1.8521%	0.8505%	1.6536%	1.8846%	0.8718%	1.7390%	1.9235%
Prduction Tax Rate on Sector 40 (Petroleum)					-2.9522%	-5.6677%	-6.2600%						
Prduction Tax Rate on Sector 41(Diesel)								-4.0795%	-7.8514%	-8.7296%			
rduction Tax Rate on Sector 50 (Trade Services)											-4.7359%	-9.3427%	-10.2799%
Savings													
rural household		1.4029%	3.0503%	4.7034%	0.6415%	1.2442%	1.3565%	0.6440%	1.2564%	1.3826%	0.6887%	1.3644%	1.4747%
urban household		1.4106%	2.9763%	4.5416%	0.5786%	1.1360%	1.2620%	0.5811%	1.1486%	1.2882%	0.6230%	1.2555%	1.3755%
GDP		1.4425%	3.0781%	4.7163%	0.5624%	1.0960%	1.2087%	0.5648%	1.1082%	1.2332%	0.6039%	1.2069%	1.3117%
Gini Coefficient		10.2910%	19.5457%	28.3720%	-0.4336%	-0.7417%	-0.6472%	-0.4334%	-0.7393%	-0.6464%	-0.4529%	-0.7459%	-0.6787%

Table 6: The Impact of the Reduction of an Export Tax on Sector 18 (Cocoa Beans) with Remittances to Urban Households (Simulation III)

Unit: a million USD except Gini Coeffficient and Tax Rate	benchmark	increase in remittances to the URBAN household only			increase in remittances to the URBAN household with the reduction of the export tax on Sector 18 (Cocoa Beans)		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue							
income tax from rural household	88.7185	90.0713	91.6599	93.2540	89.4310	90.1123	90.7934
income tax from urban household	261.2955	265.9488	271.1136	276.2775	263.5379	265.7792	267.9839
production tax	1133.3940	1137.0312	1141.1597	1145.2923	1135.2942	1137.1667	1139.0217
export tax	119.8080	120.7297	122.0764	123.4359	111.2654	102.4609	94.0670
import tariff	387.6275	392.2899	397.7353	403.1822	391.4423	395.2670	398.9672
Government Deficits		-10.5896	-22.8809	-35.1880	0.0000	0.0000	0.0000
Export Tax Rate on Sector 18 (Cocoa Beans)	14.1960%				13.2586%	12.3017%	11.3652%
Savings							
rural household	231.8894	235.1426	238.9627	242.7960	233.6027	235.2412	236.8791
urban household	138.6556	140.6115	142.7824	144.9529	139.5981	140.5402	141.4669
Welfare (Equivalent Variation)							
rural household	0.0000	0.0968	0.2050	0.3092	0.0581	0.1140	0.1690
urban household	0.0000	0.1625	0.3084	0.4376	0.0521	0.1039	0.1539
GDP	11429.3131	11594.1791	11781.1238	11968.3522	11504.0823	11576.9380	11649.5320
Gini Coefficient	39.40	43.45	47.10	50.58	39.24	39.17	39.07
		% increase from the benchmark value			% increase from the benchmark value		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue							
income tax from rural household		1.5249%	3.3154%	5.1122%	0.8031%	1.5711%	2.3388%
income tax from urban household		1.7808%	3.7575%	5.7337%	0.8582%	1.7159%	2.5597%
production tax		0.3209%	0.6852%	1.0498%	0.1677%	0.3329%	0.4965%
export tax		0.7694%	1.8934%	3.0281%	-7.1303%	-14.4790%	-21.4852%
import tariff		1.2028%	2.6076%	4.0128%	0.9841%	1.9708%	2.9254%
Export Tax Rate on Sector 18 (Cocoa Beans)					-6.6037%	-13.3441%	-19.9408%
Savings							
rural household		1.4029%	3.0503%	4.7034%	0.7388%	1.4454%	2.1517%
urban household		1.4106%	2.9763%	4.5416%	0.6797%	1.3592%	2.0275%
GDP		1.4425%	3.0781%	4.7163%	0.6542%	1.2916%	1.9268%
Gini Coefficient		10.2910%	19.5457%	28.3720%	-0.4072%	-0.5902%	-0.8443%

Table 7: The Impact of Subsidies with Remittances to Urban Households (Simulation IV)

Unit: a million USD except Gini Coeffficient	benchmark	increase in remittances to the URBAN household only			increase in remittances to the URBAN household with subsidies to Sector 6 (Yams)			increase in remittances to the URBAN household with subsidies to Sector 15 (Vegitables)			increase in remittances to the URBAN household with subsidies to Sector 18 (Cocoa Beans)		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue													
income tax from rural household	88.7185	90.0713	91.6599	93.2540	89.5463	90.1461	90.7211	89.6273	90.4109	90.6351	89.7742	90.4395	91.1204
income tax from urban household	261.2955	265.9488	271.1136	276.2775	263.4093	264.9993	266.4847	263.6936	265.8055	266.4493	264.1600	265.9741	267.8192
production tax	1133.3940	1137.0312	1141.1597	1145.2923	1126.1481	1121.0282	1116.0779	1125.1366	1118.2074	1116.2247	1123.9816	1118.0508	1111.7904
export tax	119.8080	120.7297	122.0764	123.4359	120.3745	120.6786	121.0719	120.5208	120.9949	121.0453	120.4805	120.9499	121.4983
import tariff	387.6275	392.2899	397.7353	403.1822	391.2612	393.9717	396.4643	391.7811	395.3811	396.5300	392.4143	395.5123	398.5738
Government Deficits		-10.5896	-22.8809	-35.1880	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Subsidies to Sector 6 (Yams)	0.0000				9.2003	15.7610	22.0942						
Subsidies to Sector 15 (Vegitables)	0.0000							10.4444	19.2804	21.8305			
Subsidies to Sector 18 (Cocoa Beans)	0.0000										11.9283	19.4463	27.3223
Savings													
rural household	231.8894	235.1426	238.9627	242.7960	233.8802	235.3224	236.7053	234.0748	235.9593	236.4984	234.4281	236.0279	237.6654
urban household	138.6556	140.6115	142.7824	144.9529	139.5441	140.2124	140.8368	139.6636	140.5513	140.8219	139.8596	140.6221	141.3977
Welfare (Equivalent Variation)													
rural household	0.0000	0.0968	0.2050	0.3092	0.0661	0.1141	0.1594	0.0748	0.1385	0.1570	0.0842	0.1372	0.1908
urban household	0.0000	0.1625	0.3084	0.4376	0.0491	0.0859	0.1197	0.0562	0.1052	0.1201	0.0657	0.1068	0.1484
GDP	11429.3131	11594.1791	11781.1238	11968.3522	11507.7232	11565.4101	11620.0806	11516.5079	11592.5535	11615.0599	11532.0217	11597.1955	11663.2448
Gini Coefficient	39.40	43.45	47.10	50.58	38.81	38.43	38.05	38.82	38.36	38.26	38.79	38.41	38.03
		% increase from the benchmark value			% increase from the benchmark value			% increase from the benchmark value			% increase from the benchmark value		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue													
income tax from rural household		1.5249%	3.3154%	5.1122%	0.9331%	1.6091%	2.2573%	1.0243%	1.9076%	2.1603%	1.1900%	1.9398%	2.7074%
income tax from urban household		1.7808%	3.7575%	5.7337%	0.8090%	1.4175%	1.9860%	0.9178%	1.7260%	1.9724%	1.0962%	1.7905%	2.4967%
production tax		0.3209%	0.6852%	1.0498%	-0.6393%	-1.0910%	-1.5278%	-0.7286%	-1.3399%	-1.5149%	-0.8305%	-1.3537%	-1.9061%
export tax		0.7694%	1.8934%	3.0281%	0.4728%	0.7267%	1.0549%	0.5949%	0.9907%	1.0327%	0.5613%	0.9531%	1.4108%
import tariff		1.2028%	2.6076%	4.0128%	0.9374%	1.6367%	2.2797%	1.0715%	2.0003%	2.2967%	1.2349%	2.0341%	2.8239%
Savings													
rural household		1.4029%	3.0503%	4.7034%	0.8585%	1.4804%	2.0768%	0.9424%	1.7551%	1.9876%	1.0948%	1.7847%	2.4908%
urban household		1.4106%	2.9763%	4.5416%	0.6408%	1.1228%	1.5731%	0.7270%	1.3672%	1.5623%	0.8683%	1.4183%	1.9776%
GDP		1.4425%	3.0781%	4.7163%	0.6860%	1.1908%	1.6691%	0.7629%	1.4283%	1.6252%	0.8986%	1.4689%	2.0468%
Gini Coefficient		10.2910%	19.5457%	28.3720%	-1.4995%	-2.4493%	-3.4315%	-1.4826%	-2.6499%	-2.8984%	-1.5560%	-2.5021%	-3.4824%

Table 8: The Impact of More Government Expenditure with Remittances to Urban Households (Simulation V)

Unit: a million USD except Gini Coeffficient	benchmark	increase in remittances to the URBAN household only			increase in remittances to the URBAN household with more government expenditure on Sector 58 (Education)			increase in remittances to the URBAN household with more government expenditure on Sector 59 (Health)		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue										
income tax from rural household	88.7185	90.0713	91.6599	93.2540	89.4066	90.0790	90.7480	89.4168	90.0899	90.7636
income tax from urban household	261.2955	265.9488	271.1136	276.2775	263.5339	265.8026	268.0321	263.5667	265.8316	268.0696
production tax	1133.3940	1137.0312	1141.1597	1145.2923	1135.2034	1137.0044	1138.7883	1135.2319	1137.0299	1138.8231
export tax	119.8080	120.7297	122.0764	123.4359	120.3963	120.8268	121.3369	120.3964	120.8285	121.3385
import tariff	387.6275	392.2899	397.7353	403.1822	391.1983	394.6623	398.0663	391.2515	394.7137	398.1427
Government Deficits		-10.5896	-22.8809	-35.1880	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Government Expenditure on Sector 58 (Education)	289.2981				295.4315	301.6168	307.6272			
Government Expenditure on Sector 59 (Health)	56.7430							62.9180	69.1021	75.1224
Savings										
rural household	231.8894	235.1426	238.9627	242.7960	233.5440	235.1612	236.7699	233.5687	235.1873	236.8074
urban household	138.6556	140.6115	142.7824	144.9529	139.5965	140.5501	141.4872	139.6103	140.5622	141.5029
Welfare (Equivalent Variation)										
rural household	0.0000	0.0968	0.2050	0.3092	0.0555	0.1098	0.1630	0.0555	0.1089	0.1615
urban household	0.0000	0.1625	0.3084	0.4376	0.0510	0.1024	0.1521	0.0512	0.1019	0.1513
GDP	11429.3131	11594.1791	11781.1238	11968.3522	11511.6902	11593.2405	11674.0463	11512.8987	11594.4071	11675.6473
Gini Coefficient	39.40	43.45	47.10	50.58	39.30	39.28	39.23	39.30	39.27	39.22
		% increase from the benchmark value			% increase from the benchmark value			% increase from the benchmark value		
		10% increase	20% increase	30% increase	10% increase	20% increase	30% increase	10% increase	20% increase	30% increase
Tax Revenue										
income tax from rural household		1.5249%	3.3154%	5.1122%	0.7756%	1.5336%	2.2876%	0.7871%	1.5458%	2.3052%
income tax from urban household		1.7808%	3.7575%	5.7337%	0.8567%	1.7249%	2.5782%	0.8692%	1.7360%	2.5925%
production tax		0.3209%	0.6852%	1.0498%	0.1596%	0.3185%	0.4759%	0.1622%	0.3208%	0.4790%
export tax		0.7694%	1.8934%	3.0281%	0.4911%	0.8504%	1.2761%	0.4911%	0.8518%	1.2775%
import tariff		1.2028%	2.6076%	4.0128%	0.9212%	1.8148%	2.6930%	0.9349%	1.8281%	2.7127%
Government Expenditure on Sector 58 (Education)					2.1201%	4.2581%	6.3357%			
Government Expenditure on Sector 59 (Health)								10.8825%	21.7809%	32.3906%
Savings										
rural household		1.4029%	3.0503%	4.7034%	0.7135%	1.4109%	2.1046%	0.7242%	1.4222%	2.1208%
urban household		1.4106%	2.9763%	4.5416%	0.6786%	1.3663%	2.0421%	0.6885%	1.3751%	2.0535%
GDP		1.4425%	3.0781%	4.7163%	0.7208%	1.4343%	2.1413%	0.7313%	1.4445%	2.1553%
Gini Coefficient		10.2910%	19.5457%	28.3720%	-0.2411%	-0.3054%	-0.4249%	-0.2458%	-0.3224%	-0.4577%

Appendix 2-1: Economic Values of Final Consumption Goods by the Rural Household in the Benchmark Model,

$$P_i^Q Q_i;\ i = 1,2,\cdots,59$$

Unit: a million USD

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
model	161.3466	181.0993	164.7513	3.5397	243.5304	246.1961	49.3526	23.5462	0.7045	29.1376	51.7212	0.0000	23.7231	0.0000	350.0597	0.0000	139.3511	0.0000	13.4950	0.0000
actual	161.3466	181.0993	164.7513	3.5397	243.5304	246.1961	49.3526	23.5462	0.7045	29.1376	51.7212	0.0000	23.7231	0.0000	350.0597	0.0000	139.3511	0.0000	13.4950	0.0000

i	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
model	46.5567	33.4926	38.3056	20.9585	58.7158	0.0000	137.0186	0.0000	326.8628	151.7803	11.3400	28.4616	253.5878	79.4779	207.1868	69.3121	35.5209	9.1542	0.0000	26.1875
actual	46.5567	33.4926	38.3056	20.9585	58.7158	0.0000	137.0186	0.0000	326.8628	151.7803	11.3400	28.4616	253.5878	79.4779	207.1868	69.3121	35.5209	9.1542	0.0000	26.1875

i	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
model	9.2716	143.8824	31.3530	244.9696	32.1250	316.4404	0.0000	0.4894	122.9051	0.0000	235.0137	67.2638	36.1436	19.8688	75.2528	91.3408	0.7734	2.1138	15.7557
actual	9.2716	143.8824	31.3530	244.9696	32.1250	316.4404	0.0000	0.4894	122.9051	0.0000	235.0137	67.2638	36.1436	19.8688	75.2528	91.3408	0.7734	2.1138	15.7557

Appendix 2-2: Economic Values of Final Consumption Goods by the Urban Household in the Benchmark Model,

$$P_i^Q Q_i;\ i = 1,2,\cdots,59$$

Unit: a million USD

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
model	54.8043	198.6549	13.7817	4.3154	118.0666	220.2583	31.0591	16.3610	0.0097	13.7614	18.1908	0.0000	46.1061	0.0000	223.3785	0.0000	86.8935	0.0000	2.8668	0.0000
actual	54.8043	198.6549	13.7817	4.3154	118.0666	220.2583	31.0591	16.3610	0.0097	13.7614	18.1908	0.0000	46.1061	0.0000	223.3785	0.0000	86.8935	0.0000	2.8668	0.0000

i	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
model	58.8608	58.6503	69.4302	35.9050	41.3304	0.0000	128.9009	0.0000	417.2806	173.8144	15.1842	67.3249	175.3232	92.1036	242.9253	82.6421	79.8833	23.6569	0.0000	95.4730
actual	58.8608	58.6503	69.4302	35.9050	41.3304	0.0000	128.9009	0.0000	417.2806	173.8144	15.1842	67.3249	175.3232	92.1036	242.9253	82.6421	79.8833	23.6569	0.0000	95.4730

i	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
model	24.1693	55.6489	1.3699	250.3509	30.5753	550.0410	0.0000	0.9181	255.0649	0.0000	776.6547	140.6510	114.0056	51.7732	177.2926	167.4242	2.2056	3.6677	14.7460
actual	24.1693	55.6489	1.3699	250.3509	30.5753	550.0410	0.0000	0.9181	255.0649	0.0000	776.6547	140.6510	114.0056	51.7732	177.2926	167.4242	2.2056	3.6677	14.7460

Appendix 2-3: Labor Income of Self-Employed Worker in the Benchmark Model, $w_j^s L_{sj};\ j = 1,2,\cdots,59$

Unit: a million USD

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
model	105.8925	38.4763	73.8565	0.0000	180.1520	195.9985	29.2284	11.5242	4.7339	32.9612	35.0544	9.6803	28.0700	11.2050	251.8190	3.5449	73.0213	283.0253	6.9436	5.9172
actual	105.8925	38.4763	73.8565	0.0000	180.1520	195.9985	29.2284	11.5242	4.7339	32.9612	35.0544	9.6803	28.0700	11.2050	251.8190	3.5449	73.0213	283.0253	6.9436	5.9172

i	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
model	0.6707	21.8156	35.3879	42.8736	48.8370	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
actual	0.6707	21.8156	35.3879	42.8736	48.8370	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

i	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
model	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
actual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix 2-4: Labor Income of Unskilled Worker in the Benchmark Model, $w_j^{us} Lusk_j;\ j = 1,2,\cdots,59$

Unit: a million USD

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
model	32.0739	11.6541	22.3705	0.0000	54.5664	59.3662	8.8530	3.4906	1.4339	9.9837	10.6177	2.9321	9.5731	3.8214	73.5411	1.0353	24.9034	235.6325	2.3681	2.0180
actual	32.0739	11.6541	22.3705	0.0000	54.5664	59.3662	8.8530	3.4906	1.4339	9.9837	10.6177	2.9321	9.5731	3.8214	73.5411	1.0353	24.9034	235.6325	2.3681	2.0180

i	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
model	0.2880	9.3678	10.0627	12.1914	25.8928	384.7704	110.0018	128.3078	23.0544	88.1841	5.6232	19.6924	81.9941	15.1783	56.8272	29.4589	83.0274	11.3766	0.0000	10.9324
actual	0.2880	9.3678	10.0627	12.1914	25.8928	384.7704	110.0018	128.3078	23.0544	88.1841	5.6232	19.6924	81.9941	15.1783	56.8272	29.4589	83.0274	11.3766	0.0000	10.9324

i	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
model	9.3545	0.2570	0.0000	34.3712	40.9948	49.9234	590.9863	4.3730	77.3390	419.8873	44.1981	190.8424	78.3951	36.0783	126.4153	80.3944	634.1366	27.8624	12.0627
actual	9.3545	0.2570	0.0000	34.3712	40.9948	49.9234	590.9863	4.3730	77.3390	419.8873	44.1981	190.8424	78.3951	36.0783	126.4153	80.3944	634.1366	27.8624	12.0627

Appendix 2-5: Labor Income of Skilled Worker in the Benchmark Model, $w_j^{sk} Lsk_j$; $j = 1,2,\cdots,59$

Unit: a million USD

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
model	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
actual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

i	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
model	0.0000	0.0000	0.0000	0.0000	0.0000	19.4127	69.7719	30.8172	0.3714	0.0000	20.0733	6.8262	0.0000	0.0000	0.0000	0.0000	0.0000	3.9142	0.0000	0.0000
actual	0.0000	0.0000	0.0000	0.0000	0.0000	19.4127	69.7719	30.8172	0.3714	0.0000	20.0733	6.8262	0.0000	0.0000	0.0000	0.0000	0.0000	3.9142	0.0000	0.0000

i	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
model	0.0000	0.0000	0.0000	11.7311	0.0000	12.7006	87.6512	5.0142	36.2130	9.9256	0.8788	11.0618	21.8410	48.1011	0.0000	45.1715	377.3795	180.6854	49.0762
actual	0.0000	0.0000	0.0000	11.7311	0.0000	12.7006	87.6512	5.0142	36.2130	9.9256	0.8788	11.0618	21.8410	48.1011	0.0000	45.1715	377.3795	180.6854	49.0762

Appendix 2-6: Capital Income in the Agriculture in the Benchmark Model, $r_j^a Ka_j$; $j = 1,2,\cdots,59$

Unit: a million USD

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
model	5.4798	2.7494	4.2129	0.0000	12.2215	21.4011	5.1579	1.8536	0.2564	2.3531	2.7171	2.2538	3.6592	1.4935	10.8366	0.3078	7.3163	19.5665	0.4618	0.8966
actual	5.4798	2.7494	4.2129	0.0000	12.2215	21.4011	5.1579	1.8536	0.2564	2.3531	2.7171	2.2538	3.6592	1.4935	10.8366	0.3078	7.3163	19.5665	0.4618	0.8966

i	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
model	0.2097	6.6148	6.3125	7.5228	10.9965	128.7726	31.8345	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
actual	0.2097	6.6148	6.3125	7.5228	10.9965	128.7726	31.8345	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

i	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
model	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
actual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix 2-7: General Capital Income in the Benchmark Model, $r_j^n Kn_j;\ j = 1,2,\cdots,59$

Unit: a million USD

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
model	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
actual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

i	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
model	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	328.9445	11.9689	14.5565	15.8624	14.5749	38.1160	3.8420	17.6739	8.0831	26.0721	6.4357	0.0000	23.0972
actual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	328.9445	11.9689	14.5565	15.8624	14.5749	38.1160	3.8420	17.6739	8.0831	26.0721	6.4357	0.0000	23.0972

i	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
model	19.7005	0.5417	0.0000	42.1319	33.2258	37.1404	358.4916	7.9680	146.4867	103.4885	18.5759	87.2785	85.0319	69.2978	119.4375	78.5519	241.9299	56.5929	17.0303
actual	19.7005	0.5417	0.0000	42.1319	33.2258	37.1404	358.4916	7.9680	146.4867	103.4885	18.5759	87.2785	85.0319	69.2978	119.4375	78.5519	241.9299	56.5929	17.0303

Appendix 2-8: Income for the Land Owner in the Benchmark Model, $LP_j\ La_j;\ j = 1,2,\cdots,59$

Unit: a million USD

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
model	56.9210	22.7400	38.9151	0.0000	104.2933	172.6834	33.1007	11.9708	0.3161	14.3378	15.1372	11.6548	31.7892	12.5514	96.7849	2.6807	34.2172	74.8302	4.0150	6.3113
actual	56.9210	22.7400	38.9151	0.0000	104.2933	172.6834	33.1007	11.9708	0.3161	14.3378	15.1372	11.6548	31.7892	12.5514	96.7849	2.6807	34.2172	74.8302	4.0150	6.3113

i	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
model	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
actual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

i	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
model	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
actual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix 2-9: Economic Values of the Benchmark Model

Unit: a million USD (except for Gini Coefficient)

	model	actual
Savings		
Private Sector		
Rural households	231.8894	231.8894
Urban households	138.6556	138.6556
Government Sector	745.4039	745.4039
Foreign Sector	1,986.8083	1,986.8084
Total Tax Revenue		
Income Tax		
from Rural households	88.7185	88.7185
from Urban households	261.2955	261.2955
Production Tax	1,133.3940	1,133.3940
Export Tax	119.8080	119.8080
Import Tarrif	387.6275	387.6275
GDP	11,429.3131	11,429.3131
Gini Coefficient	39.4	39.4

Appendix 3-1: Calculated Production Tax Rates

$$TAUP(i) = \tau_i^p ; \; i = 1,2,\cdots,59 \quad \text{(Production Tax Rate)}$$

TAUP(1)	TAUP(2)	TAUP(3)	TAUP(4)	TAUP(5)	TAUP(6)	TAUP(7)	TAUP(8)	TAUP(9)	TAUP(10)	TAUP(11)	TAUP(12)	TAUP(13)	TAUP(14)	TAUP(15)
0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

TAUP(16)	TAUP(17)	TAUP(18)	TAUP(19)	TAUP(20)	TAUP(21)	TAUP(22)	TAUP(23)	TAUP(24)	TAUP(25)	TAUP(26)	TAUP(27)	TAUP(28)	TAUP(29)	TAUP(30)
0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	49.3897%	0.0000%

TAUP(31)	TAUP(32)	TAUP(33)	TAUP(34)	TAUP(35)	TAUP(36)	TAUP(37)	TAUP(38)	TAUP(39)	TAUP(40)	TAUP(41)	TAUP(42)	TAUP(43)	TAUP(44)	TAUP(45)
0.0000%	13.4050%	4.6211%	31.9420%	11.4741%	8.4731%	4.6619%	19.9327%	0.0000%	62.9687%	57.3219%	0.0000%	22.7483%	9.2110%	5.1310%

TAUP(46)	TAUP(47)	TAUP(48)	TAUP(49)	TAUP(50)	TAUP(51)	TAUP(52)	TAUP(53)	TAUP(54)	TAUP(55)	TAUP(56)	TAUP(57)	TAUP(58)	TAUP(59)
19.3405%	0.1454%	15.9753%	0.0000%	16.0479%	0.6022%	2.3914%	1.6026%	11.9926%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

Appendix 3-2: Calculated Export Tax Rates

$$TAUPE(i) = \tau_i^e ; \; i = 1,2,\cdots,59 \quad \text{(Export Tax Rate)}$$

TAUPE(1)	TAUPE(2)	TAUPE(3)	TAUPE(4)	TAUPE(5)	TAUPE(6)	TAUPE(7)	TAUPE(8)	TAUPE(9)	TAUPE(10)	TAUPE(11)	TAUPE(12)	TAUPE(13)	TAUPE(14)	TAUPE(15)
0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

TAUPE(16)	TAUPE(17)	TAUPE(18)	TAUPE(19)	TAUPE(20)	TAUPE(21)	TAUPE(22)	TAUPE(23)	TAUPE(24)	TAUPE(25)	TAUPE(26)	TAUPE(27)	TAUPE(28)	TAUPE(29)	TAUPE(30)
0.0000%	0.0000%	14.1960%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

TAUPE(31)	TAUPE(32)	TAUPE(33)	TAUPE(34)	TAUPE(35)	TAUPE(36)	TAUPE(37)	TAUPE(38)	TAUPE(39)	TAUPE(40)	TAUPE(41)	TAUPE(42)	TAUPE(43)	TAUPE(44)	TAUPE(45)
0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

TAUPE(46)	TAUPE(47)	TAUPE(48)	TAUPE(49)	TAUPE(50)	TAUPE(51)	TAUPE(52)	TAUPE(53)	TAUPE(54)	TAUPE(55)	TAUPE(56)	TAUPE(57)	TAUPE(58)	TAUPE(59)
0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

Appendix 3-3: Calculated Import Tariff Rates

$$TAUM(i) = \tau_i^m;\ i = 1,2,\cdots,59 \quad \text{(Import Tariff Rate)}$$

TAUM(1)	TAUM(2)	TAUM(3)	TAUM(4)	TAUM(5)	TAUM(6)	TAUM(7)	TAUM(8)	TAUM(9)	TAUM(10)	TAUM(11)	TAUM(12)	TAUM(13)	TAUM(14)	TAUM(15)
0.0000%	20.5630%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

TAUM(16)	TAUM(17)	TAUM(18)	TAUM(19)	TAUM(20)	TAUM(21)	TAUM(22)	TAUM(23)	TAUM(24)	TAUM(25)	TAUM(26)	TAUM(27)	TAUM(28)	TAUM(29)	TAUM(30)
0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	18.8998%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	5.5151%	0.0000%

TAUM(31)	TAUM(32)	TAUM(33)	TAUM(34)	TAUM(35)	TAUM(36)	TAUM(37)	TAUM(38)	TAUM(39)	TAUM(40)	TAUM(41)	TAUM(42)	TAUM(43)	TAUM(44)	TAUM(45)
0.0000%	28.7187%	6.1523%	32.2464%	7.1560%	35.1581%	0.0000%	39.1748%	0.0000%	0.0000%	0.0000%	0.8349%	10.4219%	4.9250%	2.7157%

TAUM(46)	TAUM(47)	TAUM(48)	TAUM(49)	TAUM(50)	TAUM(51)	TAUM(52)	TAUM(53)	TAUM(54)	TAUM(55)	TAUM(56)	TAUM(57)	TAUM(58)	TAUM(59)
5.1803%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

Appendix 3-4: Calculated Income Tax Rates

	Rural Household	Urban Household
Income Tax Rate	1.9330%	5.5051%

Appendix 4-1: Parameter Values

$$ALPHA(i, j) = \alpha_{ij}\,;\; i = 1(rural),\; 2(urban),\; j = 1,2,\cdots,59$$

ALPHA(1, 1)	ALPHA(1, 2)	ALPHA(1, 3)	ALPHA(1, 4)	ALPHA(1, 5)	ALPHA(1, 6)	ALPHA(1, 7)	ALPHA(1, 8)	ALPHA(1, 9)	ALPHA(1, 10)	ALPHA(1, 11)	ALPHA(1, 12)	ALPHA(1, 13)	ALPHA(1, 14)	ALPHA(1, 15)
0.034620	0.038859	0.035351	0.000760	0.052255	0.052827	0.010590	0.005052	0.000151	0.006252	0.011098	0.000000	0.005090	0.000000	0.075113

ALPHA(1,16)	ALPHA(1,17)	ALPHA(1,18)	ALPHA(1,19)	ALPHA(1,20)	ALPHA(1,21)	ALPHA(1,22)	ALPHA(1,23)	ALPHA(1,24)	ALPHA(1,25)	ALPHA(1,26)	ALPHA(1,27)	ALPHA(1,28)	ALPHA(1,29)	ALPHA(1,30)
0.000000	0.029901	0.000000	0.002896	0.000000	0.009990	0.007187	0.008219	0.004497	0.012599	0.000000	0.029400	0.000000	0.070136	0.032568

ALPHA(1,31)	ALPHA(1,32)	ALPHA(1,33)	ALPHA(1,34)	ALPHA(1,35)	ALPHA(1,36)	ALPHA(1,37)	ALPHA(1,38)	ALPHA(1,39)	ALPHA(1,40)	ALPHA(1,41)	ALPHA(1,42)	ALPHA(1,43)	ALPHA(1,44)	ALPHA(1,45)
0.002433	0.006107	0.054413	0.017054	0.044457	0.014872	0.007622	0.001964	0.000000	0.005619	0.001989	0.030873	0.006727	0.052564	0.006893

ALPHA(1,46)	ALPHA(1,47)	ALPHA(1,48)	ALPHA(1,49)	ALPHA(1,50)	ALPHA(1,51)	ALPHA(1,52)	ALPHA(1,53)	ALPHA(1,54)	ALPHA(1,55)	ALPHA(1,56)	ALPHA(1,57)	ALPHA(1,58)	ALPHA(1,59)
0.067899	0.000000	0.000105	0.026372	0.000000	0.050427	0.014433	0.007755	0.004263	0.016147	0.019599	0.000166	0.000454	0.003381

ALPHA(2, 1)	ALPHA(2, 2)	ALPHA(2, 3)	ALPHA(2, 4)	ALPHA(2, 5)	ALPHA(2, 6)	ALPHA(2, 7)	ALPHA(2, 8)	ALPHA(2, 9)	ALPHA(2, 10)	ALPHA(2, 11)	ALPHA(2, 12)	ALPHA(2, 13)	ALPHA(2, 14)	ALPHA(2, 15)
0.009922	0.035964	0.002495	0.000781	0.021374	0.039875	0.005623	0.002962	0.000002	0.002491	0.003293	0.000000	0.008347	0.000000	0.040440

ALPHA(2,16)	ALPHA(2,17)	ALPHA(2,18)	ALPHA(2,19)	ALPHA(2,20)	ALPHA(2,21)	ALPHA(2,22)	ALPHA(2,23)	ALPHA(2,24)	ALPHA(2,25)	ALPHA(2,26)	ALPHA(2,27)	ALPHA(2,28)	ALPHA(2,29)	ALPHA(2,30)
0.000000	0.015731	0.000000	0.000519	0.000000	0.010656	0.010618	0.012569	0.006500	0.007482	0.000000	0.023336	0.000000	0.075543	0.031467

ALPHA(2,31)	ALPHA(2,32)	ALPHA(2,33)	ALPHA(2,34)	ALPHA(2,35)	ALPHA(2,36)	ALPHA(2,37)	ALPHA(2,38)	ALPHA(2,39)	ALPHA(2,40)	ALPHA(2,41)	ALPHA(2,42)	ALPHA(2,43)	ALPHA(2,44)	ALPHA(2,45)
0.002749	0.012188	0.031740	0.016674	0.043978	0.014961	0.014462	0.004283	0.000000	0.017284	0.004376	0.010074	0.000248	0.045323	0.005535

ALPHA(2,46)	ALPHA(2,47)	ALPHA(2,48)	ALPHA(2,49)	ALPHA(2,50)	ALPHA(2,51)	ALPHA(2,52)	ALPHA(2,53)	ALPHA(2,54)	ALPHA(2,55)	ALPHA(2,56)	ALPHA(2,57)	ALPHA(2,58)	ALPHA(2,59)
0.099577	0.000000	0.000166	0.046176	0.000000	0.140603	0.025463	0.020639	0.009373	0.032096	0.030310	0.000399	0.000664	0.002670

Appendix 4-2: Parameter Values

$$AY(i) = ay_i;\ i = 1,2,\cdots,59$$

AY(1)	AY(2)	AY(3)	AY(4)	AY(5)	AY(6)	AY(7)	AY(8)	AY(9)	AY(10)	AY(11)	AY(12)	AY(13)	AY(14)	AY(15)
0.699884	0.540301	0.759805	0.000000	0.682745	0.705417	0.599342	0.697051	0.675917	0.624411	0.661131	0.678051	0.782935	0.753102	0.720244

AY(16)	AY(17)	AY(18)	AY(19)	AY(20)	AY(21)	AY(22)	AY(23)	AY(24)	AY(25)	AY(26)	AY(27)	AY(28)	AY(29)	AY(30)
0.539582	0.468256	0.704063	0.643535	0.565900	0.138829	0.326635	0.548247	0.803117	0.684946	0.697141	0.497900	0.564314	0.254799	0.262551

AY(31)	AY(32)	AY(33)	AY(34)	AY(35)	AY(36)	AY(37)	AY(38)	AY(39)	AY(40)	AY(41)	AY(42)	AY(43)	AY(44)	AY(45)
0.259156	0.513813	0.321418	0.317804	0.619382	0.402791	0.326870	0.430966	0.000000	0.075780	0.081231	0.032583	0.000000	0.370204	0.144098

AY(46)	AY(47)	AY(48)	AY(49)	AY(50)	AY(51)	AY(52)	AY(53)	AY(54)	AY(55)	AY(56)	AY(57)	AY(58)	AY(59)
0.128848	0.704713	0.341918	0.354115	0.453133	0.092407	0.205930	0.713995	0.734131	0.654150	0.423139	0.706415	0.647720	0.695860

Appendix 4-3: Parameter Values

$$GAMMAM(i) = \gamma_i^M;\ i = 1,2,\cdots,59$$

GAMMAM(1)	GAMMAM(2)	GAMMAM(3)	GAMMAM(4)	GAMMAM(5)	GAMMAM(6)	GAMMAM(7)	GAMMAM(8)	GAMMAM(9)	GAMMAM(10)	GAMMAM(11)	GAMMAM(12)	GAMMAM(13)	GAMMAM(14)	GAMMAM(15)
0.043988	0.660226	0.000000	0.956640	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

GAMMAM(16)	GAMMAM(17)	GAMMAM(18)	GAMMAM(19)	GAMMAM(20)	GAMMAM(21)	GAMMAM(22)	GAMMAM(23)	GAMMAM(24)	GAMMAM(25)	GAMMAM(26)	GAMMAM(27)	GAMMAM(28)	GAMMAM(29)	GAMMAM(30)
0.000000	0.000000	0.000000	0.321173	0.000000	0.931915	0.000000	0.328860	0.119340	0.181125	0.000000	0.000000	0.000000	0.732532	0.000000

GAMMAM(31)	GAMMAM(32)	GAMMAM(33)	GAMMAM(34)	GAMMAM(35)	GAMMAM(36)	GAMMAM(37)	GAMMAM(38)	GAMMAM(39)	GAMMAM(40)	GAMMAM(41)	GAMMAM(42)	GAMMAM(43)	GAMMAM(44)	GAMMAM(45)
0.000000	0.144923	0.393919	0.627147	0.705475	0.448160	0.000000	0.363574	0.956491	0.000000	0.000000	0.927479	0.874091	0.634572	0.256170

GAMMAM(46)	GAMMAM(47)	GAMMAM(48)	GAMMAM(49)	GAMMAM(50)	GAMMAM(51)	GAMMAM(52)	GAMMAM(53)	GAMMAM(54)	GAMMAM(55)	GAMMAM(56)	GAMMAM(57)	GAMMAM(58)	GAMMAM(59)
0.786090	0.000000	0.000000	0.009678	0.000000	0.318108	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Appendix 4-4: Parameter Values

$$GAMMAD(i) = \gamma_i^D ; \; i = 1, 2, \cdots, 59$$

GAMMAD(1)	GAMMAD(2)	GAMMAD(3)	GAMMAD(4)	GAMMAD(5)	GAMMAD(6)	GAMMAD(7)	GAMMAD(8)	GAMMAD(9)	GAMMAD(10)	GAMMAD(11)	GAMMAD(12)	GAMMAD(13)	GAMMAD(14)	GAMMAD(15)
0.956012	0.339774	1.000000	0.043360	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

GAMMAD(16)	GAMMAD(17)	GAMMAD(18)	GAMMAD(19)	GAMMAD(20)	GAMMAD(21)	GAMMAD(22)	GAMMAD(23)	GAMMAD(24)	GAMMAD(25)	GAMMAD(26)	GAMMAD(27)	GAMMAD(28)	GAMMAD(29)	GAMMAD(30)
1.000000	1.000000	1.000000	0.678827	1.000000	0.068085	1.000000	0.671140	0.880660	0.818875	1.000000	1.000000	1.000000	0.267468	1.000000

GAMMAD(31)	GAMMAD(32)	GAMMAD(33)	GAMMAD(34)	GAMMAD(35)	GAMMAD(36)	GAMMAD(37)	GAMMAD(38)	GAMMAD(39)	GAMMAD(40)	GAMMAD(41)	GAMMAD(42)	GAMMAD(43)	GAMMAD(44)	GAMMAD(45)
1.000000	0.855077	0.606081	0.372853	0.294525	0.551840	1.000000	0.636426	0.043509	1.000000	1.000000	0.072521	0.125909	0.365428	0.743830

GAMMAD(46)	GAMMAD(47)	GAMMAD(48)	GAMMAD(49)	GAMMAD(50)	GAMMAD(51)	GAMMAD(52)	GAMMAD(53)	GAMMAD(54)	GAMMAD(55)	GAMMAD(56)	GAMMAD(57)	GAMMAD(58)	GAMMAD(59)
0.213910	1.000000	1.000000	0.990322	1.000000	0.681892	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Appendix 4-5: Parameter Values

$$KAPPAE(i) = \kappa_i^E ; \; i = 1, 2, \cdots, 59$$

KAPPAE(1)	KAPPAE(2)	KAPPAE(3)	KAPPAE(4)	KAPPAE(5)	KAPPAE(6)	KAPPAE(7)	KAPPAE(8)	KAPPAE(9)	KAPPAE(10)	KAPPAE(11)	KAPPAE(12)	KAPPAE(13)	KAPPAE(14)	KAPPAE(15)
0.000000	0.000000	0.000000	0.000000	0.005308	0.017796	0.000000	0.000000	0.000000	0.382504	0.081414	0.632704	0.000000	0.840759	0.000000

KAPPAE(16)	KAPPAE(17)	KAPPAE(18)	KAPPAE(19)	KAPPAE(20)	KAPPAE(21)	KAPPAE(22)	KAPPAE(23)	KAPPAE(24)	KAPPAE(25)	KAPPAE(26)	KAPPAE(27)	KAPPAE(28)	KAPPAE(29)	KAPPAE(30)
0.785853	0.000000	0.831646	0.000000	0.775302	0.000000	0.000000	0.000000	0.000000	0.000000	0.809406	0.239925	0.959524	0.000000	0.000000

KAPPAE(31)	KAPPAE(32)	KAPPAE(33)	KAPPAE(34)	KAPPAE(35)	KAPPAE(36)	KAPPAE(37)	KAPPAE(38)	KAPPAE(39)	KAPPAE(40)	KAPPAE(41)	KAPPAE(42)	KAPPAE(43)	KAPPAE(44)	KAPPAE(45)
0.653942	0.000000	0.221131	0.077101	0.011299	0.007872	0.566074	0.002323	0.000000	0.000000	0.000000	0.000000	0.000000	0.023014	0.000000

KAPPAE(46)	KAPPAE(47)	KAPPAE(48)	KAPPAE(49)	KAPPAE(50)	KAPPAE(51)	KAPPAE(52)	KAPPAE(53)	KAPPAE(54)	KAPPAE(55)	KAPPAE(56)	KAPPAE(57)	KAPPAE(58)	KAPPAE(59)
0.098547	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Appendix 4-6: Parameter Values

$$KAPPAD(i) = \kappa_i^D;\ i = 1,2,\cdots,59$$

KAPPAD(1)	KAPPAD(2)	KAPPAD(3)	KAPPAD(4)	KAPPAD(5)	KAPPAD(6)	KAPPAD(7)	KAPPAD(8)	KAPPAD(9)	KAPPAD(10)	KAPPAD(11)	KAPPAD(12)	KAPPAD(13)	KAPPAD(14)	KAPPAD(15)
1.000000	1.000000	1.000000	1.000000	0.994692	0.982204	1.000000	1.000000	1.000000	0.617496	0.918586	0.367296	1.000000	0.159241	1.000000

KAPPAD(16)	KAPPAD(17)	KAPPAD(18)	KAPPAD(19)	KAPPAD(20)	KAPPAD(21)	KAPPAD(22)	KAPPAD(23)	KAPPAD(24)	KAPPAD(25)	KAPPAD(26)	KAPPAD(27)	KAPPAD(28)	KAPPAD(29)	KAPPAD(30)
0.214147	1.000000	0.168354	1.000000	0.224698	1.000000	1.000000	1.000000	1.000000	1.000000	0.190594	0.760075	0.040476	1.000000	1.000000

KAPPAD(31)	KAPPAD(32)	KAPPAD(33)	KAPPAD(34)	KAPPAD(35)	KAPPAD(36)	KAPPAD(37)	KAPPAD(38)	KAPPAD(39)	KAPPAD(40)	KAPPAD(41)	KAPPAD(42)	KAPPAD(43)	KAPPAD(44)	KAPPAD(45)
0.346058	1.000000	0.778869	0.922899	0.988701	0.992128	0.433926	0.997677	1.000000	1.000000	1.000000	1.000000	1.000000	0.976986	1.000000

KAPPAD(46)	KAPPAD(47)	KAPPAD(48)	KAPPAD(49)	KAPPAD(50)	KAPPAD(51)	KAPPAD(52)	KAPPAD(53)	KAPPAD(54)	KAPPAD(55)	KAPPAD(56)	KAPPAD(57)	KAPPAD(58)	KAPPAD(59)
0.901453	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Appendix 4-7: Parameter Values

$$BETA(i,\ j)=\beta_j^i,\ i=1(selfemploed),\ 2(unskilled),\ 3(skilled),\ 4(capital\ in\ agriculture),\ 5(general\ capital),\ 6(land),\ \ j=1,2,\cdots,59$$

BETA(1 1)	BETA(1 2)	BETA(1 3)	BETA(1 4)	BETA(1 5)	BETA(1 6)	BETA(1 7)	BETA(1 8)	BETA(1 9)	BETA(1 10)	BETA(1 11)	BETA(1 12)	BETA(1 13)	BETA(1 14)	BETA(1 15)
0.528492	0.508813	0.529988	0.000000	0.512913	0.436086	0.382871	0.399602	0.702333	0.552709	0.551809	0.365006	0.384039	0.385432	0.581593
BETA(1 16)	BETA(1 17)	BETA(1 18)	BETA(1 19)	BETA(1 20)	BETA(1 21)	BETA(1 22)	BETA(1 23)	BETA(1 24)	BETA(1 25)	BETA(1 26)	BETA(1 27)	BETA(1 28)	BETA(1 29)	BETA(1 30)
0.468365	0.523607	0.461664	0.503579	0.390750	0.574042	0.577159	0.683650	0.685016	0.569685	0.000000	0.000000	0.000000	0.000000	0.000000
BETA(1 31)	BETA(1 32)	BETA(1 33)	BETA(1 34)	BETA(1 35)	BETA(1 36)	BETA(1 37)	BETA(1 38)	BETA(1 39)	BETA(1 40)	BETA(1 41)	BETA(1 42)	BETA(1 43)	BETA(1 44)	BETA(1 45)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
BETA(1 46)	BETA(1 47)	BETA(1 48)	BETA(1 49)	BETA(1 50)	BETA(1 51)	BETA(1 52)	BETA(1 53)	BETA(1 54)	BETA(1 55)	BETA(1 56)	BETA(1 57)	BETA(1 58)	BETA(1 59)	
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
BETA(2 1)	BETA(2 2)	BETA(2 3)	BETA(2 4)	BETA(2 5)	BETA(2 6)	BETA(2 7)	BETA(2 8)	BETA(2 9)	BETA(2 10)	BETA(2 11)	BETA(2 12)	BETA(2 13)	BETA(2 14)	BETA(2 15)
0.160075	0.154115	0.160529	0.000000	0.155357	0.132087	0.115968	0.121036	0.212730	0.167411	0.167138	0.110557	0.130974	0.131449	0.169848
BETA(2 16)	BETA(2 17)	BETA(2 18)	BETA(2 19)	BETA(2 20)	BETA(2 21)	BETA(2 22)	BETA(2 23)	BETA(2 24)	BETA(2 25)	BETA(2 26)	BETA(2 27)	BETA(2 28)	BETA(2 29)	BETA(2 30)
0.136781	0.178573	0.384358	0.171743	0.133263	0.246499	0.247837	0.194400	0.194788	0.302040	0.721956	0.519837	0.262888	0.651351	0.858318
BETA(2 31)	BETA(2 32)	BETA(2 33)	BETA(2 34)	BETA(2 35)	BETA(2 36)	BETA(2 37)	BETA(2 38)	BETA(2 39)	BETA(2 40)	BETA(2 41)	BETA(2 42)	BETA(2 43)	BETA(2 44)	BETA(2 45)
0.135307	0.479209	0.682658	0.798006	0.762770	0.784692	0.761025	0.523629	0.000000	0.321261	0.321958	0.321742	0.000000	0.389545	0.552337
BETA(2 46)	BETA(2 47)	BETA(2 48)	BETA(2 49)	BETA(2 50)	BETA(2 51)	BETA(2 52)	BETA(2 53)	BETA(2 54)	BETA(2 55)	BETA(2 56)	BETA(2 57)	BETA(2 58)	BETA(2 59)	
0.500413	0.569829	0.251973	0.297413	0.787336	0.694362	0.659937	0.423144	0.235073	0.514191	0.393863	0.505915	0.105085	0.154315	
BETA(3 1)	BETA(3 2)	BETA(3 3)	BETA(3 4)	BETA(3 5)	BETA(3 6)	BETA(3 7)	BETA(3 8)	BETA(3 9)	BETA(3 10)	BETA(3 11)	BETA(3 12)	BETA(3 13)	BETA(3 14)	BETA(3 15)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
BETA(3 16)	BETA(3 17)	BETA(3 18)	BETA(3 19)	BETA(3 20)	BETA(3 21)	BETA(3 22)	BETA(3 23)	BETA(3 24)	BETA(3 25)	BETA(3 26)	BETA(3 27)	BETA(3 28)	BETA(3 29)	BETA(3 30)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.036425	0.329722	0.063141	0.010493	0.000000
BETA(3 31)	BETA(3 32)	BETA(3 33)	BETA(3 34)	BETA(3 35)	BETA(3 36)	BETA(3 37)	BETA(3 38)	BETA(3 39)	BETA(3 40)	BETA(3 41)	BETA(3 42)	BETA(3 43)	BETA(3 44)	BETA(3 45)
0.483009	0.166115	0.000000	0.000000	0.000000	0.000000	0.000000	0.180157	0.000000	0.000000	0.000000	0.000000	0.000000	0.132955	0.000000
BETA(3 46)	BETA(3 47)	BETA(3 48)	BETA(3 49)	BETA(3 50)	BETA(3 51)	BETA(3 52)	BETA(3 53)	BETA(3 54)	BETA(3 55)	BETA(3 56)	BETA(3 57)	BETA(3 58)	BETA(3 59)	
0.127306	0.084513	0.288915	0.139260	0.018612	0.013807	0.038252	0.117889	0.313409	0.000000	0.221301	0.301074	0.681470	0.627821	
BETA(4 1)	BETA(4 2)	BETA(4 3)	BETA(4 4)	BETA(4 5)	BETA(4 6)	BETA(4 7)	BETA(4 8)	BETA(4 9)	BETA(4 10)	BETA(4 11)	BETA(4 12)	BETA(4 13)	BETA(4 14)	BETA(4 15)
0.027349	0.036358	0.030231	0.000000	0.034796	0.047616	0.067565	0.064275	0.038035	0.039458	0.042771	0.084982	0.050063	0.051373	0.025028
BETA(4 16)	BETA(4 17)	BETA(4 18)	BETA(4 19)	BETA(4 20)	BETA(4 21)	BETA(4 22)	BETA(4 23)	BETA(4 24)	BETA(4 25)	BETA(4 26)	BETA(4 27)	BETA(4 28)	BETA(4 29)	BETA(4 30)
0.040671	0.052462	0.031916	0.033491	0.059209	0.179460	0.175003	0.121950	0.120196	0.128274	0.241620	0.150441	0.000000	0.000000	0.000000
BETA(4 31)	BETA(4 32)	BETA(4 33)	BETA(4 34)	BETA(4 35)	BETA(4 36)	BETA(4 37)	BETA(4 38)	BETA(4 39)	BETA(4 40)	BETA(4 41)	BETA(4 42)	BETA(4 43)	BETA(4 44)	BETA(4 45)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
BETA(4 46)	BETA(4 47)	BETA(4 48)	BETA(4 49)	BETA(4 50)	BETA(4 51)	BETA(4 52)	BETA(4 53)	BETA(4 54)	BETA(4 55)	BETA(4 56)	BETA(4 57)	BETA(4 58)	BETA(4 59)	
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
BETA(5 1)	BETA(5 2)	BETA(5 3)	BETA(5 4)	BETA(5 5)	BETA(5 6)	BETA(5 7)	BETA(5 8)	BETA(5 9)	BETA(5 10)	BETA(5 11)	BETA(5 12)	BETA(5 13)	BETA(5 14)	BETA(5 15)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
BETA(5 16)	BETA(5 17)	BETA(5 18)	BETA(5 19)	BETA(5 20)	BETA(5 21)	BETA(5 22)	BETA(5 23)	BETA(5 24)	BETA(5 25)	BETA(5 26)	BETA(5 27)	BETA(5 28)	BETA(5 29)	BETA(5 30)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.673971	0.338156	0.141682
BETA(5 31)	BETA(5 32)	BETA(5 33)	BETA(5 34)	BETA(5 35)	BETA(5 36)	BETA(5 37)	BETA(5 38)	BETA(5 39)	BETA(5 40)	BETA(5 41)	BETA(5 42)	BETA(5 43)	BETA(5 44)	BETA(5 45)
0.381684	0.354677	0.317342	0.201994	0.237230	0.215308	0.238975	0.296214	0.000000	0.678739	0.678042	0.678258	0.000000	0.477500	0.447663
BETA(5 46)	BETA(5 47)	BETA(5 48)	BETA(5 49)	BETA(5 50)	BETA(5 51)	BETA(5 52)	BETA(5 53)	BETA(5 54)	BETA(5 55)	BETA(5 56)	BETA(5 57)	BETA(5 58)	BETA(5 59)	
0.372281	0.345658	0.459112	0.563327	0.194053	0.291831	0.301811	0.458967	0.451519	0.485809	0.384836	0.193012	0.213445	0.217865	
BETA(6 1)	BETA(6 2)	BETA(6 3)	BETA(6 4)	BETA(6 5)	BETA(6 6)	BETA(6 7)	BETA(6 8)	BETA(6 9)	BETA(6 10)	BETA(6 11)	BETA(6 12)	BETA(6 13)	BETA(6 14)	BETA(6 15)
0.284084	0.300714	0.279252	0.000000	0.296935	0.384211	0.433596	0.415087	0.046902	0.240423	0.238282	0.439456	0.434923	0.431745	0.223531
BETA(6 16)	BETA(6 17)	BETA(6 18)	BETA(6 19)	BETA(6 20)	BETA(6 21)	BETA(6 22)	BETA(6 23)	BETA(6 24)	BETA(6 25)	BETA(6 26)	BETA(6 27)	BETA(6 28)	BETA(6 29)	BETA(6 30)
0.354183	0.245358	0.122061	0.291187	0.416777	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
BETA(6 31)	BETA(6 32)	BETA(6 33)	BETA(6 34)	BETA(6 35)	BETA(6 36)	BETA(6 37)	BETA(6 38)	BETA(6 39)	BETA(6 40)	BETA(6 41)	BETA(6 42)	BETA(6 43)	BETA(6 44)	BETA(6 45)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
BETA(6 46)	BETA(6 47)	BETA(6 48)	BETA(6 49)	BETA(6 50)	BETA(6 51)	BETA(6 52)	BETA(6 53)	BETA(6 54)	BETA(6 55)	BETA(6 56)	BETA(6 57)	BETA(6 58)	BETA(6 59)	
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	

			1	2	3	4	5	6	7	8	9	10	11	12	13
			cmaiz	crice	csorg	cogrn	ccass	cyams	ccyam	ccpea	csbea	cpoil	cgnut	conut	cfrud
			amaiz	arice	asorg		acass	ayams	acyam	acpea	asbea	apoil	agnut	aonut	afrud
	1	cmaiz	70.375935	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	2	crice	0.000000	47.098838	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	3	csorg	0.000000	0.000000	37.831281	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	4	cogrn	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	5	ccass	0.000000	0.000000	0.000000	0.000000	761.318219	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	6	cyams	0.000000	0.000000	0.000000	0.000000	0.000000	890.399357	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	7	ccyam	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	214.215272	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	8	ccpea	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	13.327865	0.000000	0.000000	0.000000	0.000000	0.000000
	9	csbea	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	11.982786	0.000000	0.000000	0.000000	0.000000
	10	cpoil	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	71.238308	0.000000	0.000000	0.000000
	11	cgnut	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	58.629670	0.000000	0.000000
	12	conut	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	13.736526	0.000000
	13	cfrud	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	16.645344
	14	cfrue	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	15	cvegd	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	16	cvege	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	17	cplan	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	18	ccoco	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	19	cocro	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	20	coexp	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	21	cchik	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	22	ceggs	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	23	cbeef	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	24	cgoat	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	25	coliv	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	26	cfore	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	27	cfish	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	28	cmine	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	29	cforf	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	30	clocf	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	31	ccopr	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	32	cdair	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	33	cmeat	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	34	ctext	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	35	cclth	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	36	cfoot	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	37	cwood	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	38	cpapr	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	39	coils	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	40	cpetr	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	41	cdies	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	42	cfuel	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	43	cfert	163.537543	130.834716	44.705994	0.000000	0.000000	0.000000	25.461824	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	44	cchem	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	45	cmetl	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	46	ccapt	109.627121	41.673314	19.573168	0.000000	36.140360	2.431995	6.111164	9.818275	2.207690	73.132504	45.180363	14.498222	0.000000
	47	ccons	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	48	cwatr	0.000000	43.409819	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	49	celec	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	50	ctrad	313.252754	156.033179	215.426384	0.000000	477.529459	578.876555	155.236650	65.505658	11.229828	131.802587	138.781688	61.853790	123.547759
	51	cosrv	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	52	ctran	118.275643	56.739340	82.953946	0.000000	208.736767	234.572175	62.911335	25.293483	3.959263	49.930502	53.418011	24.389650	44.027296
	53	ccomm	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	54	cbusi	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	55	creal	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	56	ccsrv	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	57	cadmn	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	58	ceduc	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	59	cheal	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		trc	6.014399	109.109161	0.000000	3.757453	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Factors		labself	962.659201	349.784616	671.422651	0.000000	1,637.745311	1,781.804793	265.712691	104.765660	43.035461	299.647699	318.676604	88.002943	255.181777
		labunsk	291.580749	105.946591	203.367837	0.000000	496.058215	539.692526	80.481967	31.732569	13.035051	90.760573	96.524256	26.655294	87.028105
		labskll	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		capa	49.816543	24.994674	38.298900	0.000000	111.104977	194.555502	46.890201	16.851200	2.330574	21.391691	24.700790	20.489110	33.265356
		capn	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		land	517.463914	206.726950	353.774025	0.000000	948.120709	1,569.849360	300.915450	108.825446	2.873921	130.343795	137.611054	105.952942	288.992322
Consumption		hrur													
		hurb													
		gov													
		s-i													
Taxes		dtax													
		stax	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		mtax	0.000000	421.679392	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		etax	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		imports	119.751532	2,050.668551	0.000000	82.899065	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

			14	15	16	17	18	19	20	21	22	23	24	25	26
			cfrue	cvegd	cvege	cplan	ccoco	cocro	coexp	cchik	ceggs	cbeef	cgoat	coliv	cfore
			afrue	avegd	avege	aplan	acoco	aocro	aoexp	achik	aeggs	abeef	agoat	aoliv	afore
	1	cmaiz	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	9.638533	305.945409	42.345166	4.608819	105.352278	0.000000
	2	crice	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	3	csorg	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	4	cogrn	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	5	ccass	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	6	cyams	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	7	ccyam	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	8	ccpea	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	9	csbea	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.615928	40.663950	0.000000	0.000000	0.000000	0.000000
	10	cpoil	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	11	cgnut	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	12	conut	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	13	cfrud	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	14	cfrue	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	15	cvegd	0.000000	61.426113	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	16	cvege	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	17	cplan	0.000000	0.000000	0.000000	650.729070	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	18	ccoco	0.000000	0.000000	0.000000	0.000000	402.113180	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	19	cocro	0.000000	0.000000	0.000000	0.000000	0.000000	4.387584	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	20	coexp	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	21	cchik	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	22	ceggs	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3.181020	99.971626	0.000000	0.000000	0.000000	0.000000
	23	cbeef	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	24	cgoat	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	148.804772	0.000000	0.000000	0.000000
	25	coliv	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	15.794772	0.000000	0.000000
	26	cfore	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	10.839134	0.000000
	27	cfish	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.624019	51.778424	0.000000	0.000000	0.000000	0.000000
	28	cmine	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	29	cforf	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	30	clocf	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	31	ccopr	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	32	cdair	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	33	cmeat	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	34	ctext	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	35	cclth	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	36	cfoot	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	37	cwood	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	38	cpapr	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	39	coils	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	40	cpetr	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	41	cdies	0.000000	0.000000	0.000000	0.000000	2.178807	0.000000	0.000000	0.856782	0.000000	0.000000	0.000000	0.000000	0.000000
	42	cfuel	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	43	cfert	12.507131	496.236852	7.586540	0.000000	705.199683	11.211234	14.215480	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	44	cchem	3.546214	0.000000	1.384131	0.000000	0.000000	0.000000	1.733528	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	45	cmetl	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	46	ccapt	0.000000	144.019145	23.242608	101.258279	381.244090	2.928387	38.916227	0.000000	0.000000	0.000000	0.000000	0.000000	772.795998
	47	ccons	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	48	cwatr	0.000000	0.000000	0.000000	0.000000	0.000000	6.025567	0.000000	0.243527	7.766129	24.119141	2.540248	11.059677	123.126027
	49	celec	0.211958	0.000000	0.057836	0.000000	0.000000	0.000000	0.138070	0.007411	0.244746	0.000000	0.000000	0.000000	0.000000
	50	ctrad	51.954534	589.365815	19.503464	467.016720	516.586649	29.878711	36.947146	4.630310	139.570575	105.298449	81.233591	158.250067	545.372072
	51	cosrv	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	52	ctran	18.423526	237.840098	6.936971	220.692599	335.259934	10.635730	13.652088	1.654077	50.441999	37.970009	29.516507	59.170258	285.403315
	53	ccomm	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	126.932677
	54	cbusi	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	123.042567
	55	creal	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	128.159687
	56	ccsrv	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.381356	11.995767	8.386411	0.892526	0.000000	0.000000
	57	cadmn	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	58	ceduc	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	59	cheal	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		trc	0.000000	0.000000	0.000000	0.000000	0.000000	4.366585	0.000000	42.054774	0.000000	20.827685	4.897752	13.796876	0.000000
Factors		labself	101.863586	2,289.263458	32.226509	663.829861	2,572.956917	63.123836	53.792797	6.097295	198.323254	321.708282	389.760151	443.972906	0.000000
		labunsk	34.739921	668.555141	9.411410	226.394907	2,142.113355	21.527979	18.345688	2.618234	85.161806	91.479544	110.830472	235.389200	3,497.912631
		labskll	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	176.479380
		capa	13.577149	98.514657	2.798437	66.511669	177.877550	4.198144	8.151078	1.906166	60.134647	57.386810	68.389006	99.968096	1,170.660450
		capn	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		land	114.103227	879.863112	24.370048	311.065726	680.274215	36.500356	57.375837	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Consumption		hrur													
		hurb													
		gov													
		s-i													
Taxes		dtax													
		stax	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		mtax	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	166.463210	0.000000	0.000000	0.000000	0.000000	0.000000
		etax	0.000000	0.000000	0.000000	0.000000	1,089.163687	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
		imports	0.000000	0.000000	0.000000	0.000000	0.000000	92.157971	0.000000	880.768472	0.000000	420.582067	96.005637	251.667175	0.000000

27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
cfish	cmine	cforf	clocf	ccopr	cdair	cmeat	ctext	cclth	cfoot	cwood	cpapr	coils	cpetr	cdies	cfuel	cfert	cchem	cmetl	ccapt	ccons	cwatr	celec	ctrad	cosrv	ctran
afish	amine	aforf	alocf	acopr	adair	ameat	atext	aclth	afoot	awood	apapr		apetr	adies	afuel		achem	ametl	acapt	acons	awatr	aelec	atrad	aosrv	atran
0.000000	0.000000	7.843293	155.608260	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	55.629031	0.000000
0.000000	0.000000	6.478499	155.310488	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	83.500282	0.000000
0.000000	0.000000	6.495497	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	15.246855	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	603.366809	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	558.208541	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	212.705573	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	29.899246	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	74.910473	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	108.211800	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	116.866126	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	142.568755	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	54.663219	0.000000
0.000000	0.000000	15.082687	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	40.799324	0.000000
0.000000	0.000000	0.000000	148.946963	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	41.636233	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	27.307615	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	930.543598	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	39.690924	0.000000	0.000000	0.000000	0.000000	94.119995	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	54.661705	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	165.400096	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	111.182823	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	244.057796	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	55.434192	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	110.825204	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	27.899207	0.000000
0.000000	0.000000	7.613738	0.000000	0.000000	163.968868	264.619353	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	27.957706	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	12.900359	0.000000	0.000000	1,300.866575	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	7.613871	0.000000	0.000000	0.000000	307.267509	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	150.929428	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	72.371629	245.875180	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	25.239590	0.000000	0.000000	0.000000	40.166519	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	223.037961	0.000000
0.000000	0.000000	14.706688	228.616428	126.291047	0.000000	34.727084	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	193.137198	0.000000
0.000000	0.000000	82.996508	101.018479	0.000000	18.076880	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	61.278182	0.000000
0.000000	0.000000	0.000000	0.000000	1.682763	8.994720	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	82.818670	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	414.016241	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	254.191154	0.000000
0.000000	102.477533	0.000000	0.000000	0.000000	0.000000	0.000000	8.990676	90.547602	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	15.059334	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	271.022284	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	29.562531	0.000000	6.312596	34.711074	0.000000	0.000000	0.000000	67.695268	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	80.201735	0.000000	0.000000	0.000000	0.000000	110.421676	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	137.539698	0.000000	0.000000	0.000000	0.000000	0.000000	70.219690	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3,112.946333	2,426.966672	66.713429	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	339.191333	0.000000	0.000000	0.000000
0.376696	4.315966	1.010428	3.420947	0.138717	4.377632	2.348076	0.185962	0.717089	0.364482	3.973024	6.280083	0.000000	0.745605	0.707033	0.009464	0.000000	8.671949	6.784936	2.513246	7.902090	3.149806	1.253181	14.017738	34.379024	5,323.211641
7.349560	298.202024	4.374685	14.818870	0.600577	18.969919	10.163750	1.477146	5.697099	2.895726	205.012057	9.540091	0.000000	0.530309	0.502878	0.006731	0.000000	17.931404	30.652441	12.371616	149.693243	10.876990	73.382085	84.985059	21.526056	3,678.263226
403.027750	147.848998	5.565184	18.851714	0.764062	24.133831	12.927316	5.543889	21.389285	10.873536	0.168115	3.441679	0.000000	0.518709	0.491878	0.006584	0.000000	2.442802	79.230676	8.343146	14.114395	0.000000	0.000000	11.559687	0.000000	477.581814
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	365.698893	0.000000	0.000000	0.000000	0.000000	0.000000	46.106731	31.583617	13.071175	0.000000	5.461377	0.000000	0.000000	0.000000	0.000000	0.000000	589.119901	0.000000	281.487792	0.000000	85.721069	0.000000	0.000000	70.690140	0.000000
0.000000	126.658325	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	3,576.496549	1,456.810396	0.000000	486.627028	0.000000	88.878399	0.000000
872.311919	1,120.579606	0.000000	0.000000	0.000000	0.000000	0.000000	6.554742	19.587892	11.560390	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	45.769191	1,670.953791	212.377608	1,593.098135	95.479388	2,941.310549	1,715.156106	143.352915	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	21.361971	301.847055	0.000000	0.000000	0.000000
0.000000	0.000000	7.313372	31.438485	0.000000	6.391897	37.355224	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	159.937042	0.000000	61.632817	0.000000
0.071057	598.224546	5.014995	16.990659	0.735061	6.968358	28.967464	5.618107	21.681898	11.020252	70.673386	9.409739	0.000000	9.173896	8.697017	0.116399	0.000000	55.224474	1,888.511814	53.950606	1.346820	87.075148	8.237440	140.090107	59.500220	29.716686
387.413880	201.975737	103.287313	156.743918	17.237009	83.597813	626.011896	79.945162	95.265300	149.769833	394.074128	78.992055	0.000000	598.800206	507.086941	14.644993	0.000000	358.938759	261.712158	450.654057	0.000000	0.000000	0.000000	0.000000	1,837.800486	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	41.718862	0.000000
59.935412	77.201762	7.208632	45.247111	2.040257	6.311742	40.661186	6.001138	0.000000	8.516515	0.000000	0.000000	0.000000	50.255540	43.070610	1.183757	0.000000	20.915764	0.000000	20.703824	481.840104	0.000000	0.000000	3,885.275401	781.202272	0.000000
70.082006	77.270999	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	123.738851	211.721001
68.907235	149.622355	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	526.924616	201.782041
70.463473	155.564622	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	124.852839	214.958129
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	248.400001	0.000000	0.000000	5.388613	96.423283	49.065440	129.729318	26.930358	0.000000	10.126520	258.694674	0.000000	0.000000	132.891088	73.395188	195.360789	69.874342	1,345.407086	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
1,000.016300	1,166.434762	209.585647	801.673270	51.120355	179.022025	745.400667	137.984635	516.611073	267.807821	754.794738	103.423982	0.000000	99.385252	85.041009	2.336001	0.000000	312.465667	372.679836	453.849518	5,372.603134	39.754894	703.081785	3,817.157658	401.801168	1,734.930524
634.289547	280.156275	3.376392	0.000000	182.484924	62.056818	0.000000	0.000000	0.000000	0.000000	0.000000	35.583470	0.000000	0.000000	0.000000	0.000000	0.000000	106.646712	0.000000	115.460446	796.829166	45.583312	329.209264	90.232901	7.989365	100.561765
289.404724	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	2,990.404682	108.808505	132.332055	144.203553	132.499521	346.508851	34.927056	160.671915	73.482612	237.019154	58.506225	0.000000	209.974972	179.095878	4.924489	0.000000	383.016973	302.052957	337.639955	3,259.014588	72.435916	1,331.697713	940.804849	168.871817	793.440933
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

0.000000	0.000000	623.712777	0.000000	0.000000	97.464147	156.985501	173.790768	125.466893	71.793545	141.455682	91.352664	0.000000	2,570.589658	1,863.913607	0.000000	166.961605	199.575918	240.255443	1,361.352923	19.448648	73.716177	0.000000	1,717.009192	37.711669	305.295620
0.000000	0.000000	270.062689	0.000000	0.000000	31.179231	104.276311	271.726464	192.779808	192.636319	0.000000	88.180511	0.000000	0.000000	0.000000	23.597078	157.488339	188.436592	44.822775	1,370.557958	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
0.000000	0.000000	4,896.767407	0.000000	0.000000	108.567636	1,694.910155	842.655474	2,693.971857	547.915106	0.000000	225.095225	5,687.123094	0.000000	0.000000	2,826.233373	1,511.133244	3,826.113637	1,650.521985	26,457.062017	0.000000	0.000000	65.242490	0.000000	2,938.909014	0.000000

53	54	55	56	57	58	59																
ccomm	cbusi	creal	ccsrv	cadmn	ceduc	cheal																
acomm	abusi	areal	acsrv	aadmn	aeduc	aheal	trc	labself	labunsk	labskll	capa	capn	land	hrur	hurb	gov	s-i	dtax	stax	mtax	etax	Exports
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							1466.787293	498.221318	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							1646.357269	1805.953765	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							1497.739172	125.288235	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							32.178926	39.230737	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							2213.912980	1073.332353	0.000000	0.000000					24.823656
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							2238.146091	2002.348172	0.000000	0.000000					103.080103
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							448.659830	282.355880	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							214.056129	148.736162	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							6.404783	0.087880	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							264.887481	125.103384	0.000000	0.000000					332.108015
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							470.193148	165.370535	0.000000	0.000000					71.117283
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	0.000000					224.975826
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							215.664461	419.146179	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	0.000000					295.045235
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							3182.361080	2030.714002	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	0.000000					100.210337
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							1266.828578	789.941183	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	0.000000					7672.311290
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							122.681889	26.061691	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	0.000000					188.606234
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							423.242720	535.098300	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							304.478329	533.184533	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							348.233157	631.183193	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							190.531450	326.408846	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							533.779924	375.731306	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	0.000000					5625.278737
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							1245.624062	1171.826790	0.000000	0.000000					926.985455
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	0.000000					7544.390277
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							2971.479815	3793.459938	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							1379.820809	1580.130603	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							103.090607	138.037905	0.000000	0.000000					953.343362
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							258.741614	612.044478	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							2305.343196	1593.847652	0.000000	0.000000					785.932217
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							722.526250	837.305553	0.000000	0.000000					55.348501
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							1883.516757	2208.411536	0.000000	0.000000					13.772353
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							630.110242	751.292088	0.000000	0.000000					7.235339
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							322.917584	726.211542	0.000000	0.000000					1797.698121
106.269387	79.358095	169.987836	0.000000	0.000000	0.000000	0.000000	0.000000							83.219663	215.062290	0.000000	0.000000					1.276660
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	0.000000					0.000000
2.111370	11.618680	43.497152	22.708935	25.505481	8.103304	2.516162	0.000000							238.067809	867.936774	0.000000	0.000000					0.000000
11.656752	4.973558	18.671323	41.739273	52.124786	14.913975	4.626536	0.000000							84.287687	219.720504	0.000000	0.000000					0.000000
0.041094	0.008637	0.032453	6.706724	0.000000	2.387372	0.741536	0.000000							1308.021853	505.898664	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							285.027626	12.453754	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	83.121521	183.079801	47.351757	14.321868	0.000000							2226.996424	2275.916901	0.000000	0.000000					54.457385
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							292.045498	277.957567	0.000000	312.579392					0.000000
45.203578	32.969592	76.398172	0.000000	0.000000	0.000000	0.000000	0.000000							2876.731166	5000.373103	0.000000	15095.478399					827.815891
80.938880	59.291764	136.309968	0.000000	0.000000	0.000000	0.000000	0.000000							0.000000	0.000000	0.000000	12798.826260					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							4.448964	8.346735	0.000000	0.000000					0.000000
14.865066	12.304441	46.143503	73.729634	5.592641	26.427283	8.187720	0.000000							1117.318859	2318.771649	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	837.652656							0.000000	0.000000	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000							2136.488150	7060.497518	0.000000	0.000000					0.000000
44.856743	32.740234	75.669657	290.442761	693.286613	172.987264	52.111233	2,008.858729							611.489451	1278.645147	0.000000	0.000000					0.000000
123.636666	91.052187	207.292512	0.000000	0.000000	0.000000	0.000000	0.000000							328.577900	1036.414246	0.000000	0.000000					0.000000
120.345194	89.331240	197.218829	0.000000	0.000000	0.000000	0.000000	0.000000							180.625441	470.665822	0.000000	0.000000					0.000000
124.735427	91.645792	210.438793	0.000000	0.000000	0.000000	0.000000	0.000000							684.116267	1611.751352	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	2,011.293151	0.000000	0.000000	0.000000	0.000000							830.371076	1522.038174	0.000000	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	3,776.133460	0.000000	0.000000	0.000000							7.030939	20.050767	12327.471313	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	1,038.772555	0.000000	0.000000							19.216081	33.342306	2629.982356	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	228.090525	0.000000							143.233476	134.054623	515.845382	0.000000					0.000000
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000																
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000																
712.682338	327.984160	1,149.230439	730.858427	5,764.878008	253.294613	109.660528																
198.554276	437.282424	0.000000	410.649569	3,430.723028	1,642.594487	446.147147																
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000																
773.017227	629.979751	1,085.795744	714.108467	2,199.362662	514.480689	154.820752																
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000																
								12424.788851	14086.383630	1711.853255	2704.168102	4023.221119	6775.002408	333.2991848	-333.2991848	2282.850147						1940.558119
								1490.569409	23498.510622	7821.037413	0.000000	10339.531615	0.000000	333.2991848	-333.299185	2476.489455						7559.146433
																		7293.093315	10303.58227	3523.886677	1089.163687	5714.233197
														2108.085608	1260.505794	6776.399027						18061.89362
												4111.147726		806.5316991	2375.41389							
37.805048	227.924786	0.000000	0.000000	0.000000	0.000000	0.000000																
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000																
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000																
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000										914.9214655						