"Cooperative decision-making on fiscal and monetary policy in Iraq using the prisoner's dilemma"

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BUSINESS PERSPECTIVES

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COOPERATIVE DECISION-MAKING ON FISCAL AND MONETARY POLICY IN IRAQ USING THE PRISONER'S DILEMMA

Abstract

This paper investigates the interaction between fiscal and monetary policy in Iraq after 2003 using the prisoner's dilemma.

The paper aims to determine the best form of coordination between these policies to achieve their goals; payoff matrix for both policies was constructed. To achieve the purpose, the quantitative approach was applied using several methods, including regression, building payoff matrices and decision analysis using a number of software.

The results of the monetary policy payment function show that inflation rate has an inverse relationship with the auctions of selling foreign currency and a positive relationship with the government's activity, while the fiscal policy function shows that real growth is positively related to price levels (the inverted Phillips curve) and correlates with the government's activity. After using the Gambit Solution to determine the Nash balance, which is achieved through the expansion strategies of both policies to confirm the results, the Promethee-Gaia method was used for multi-criteria decision making. When the two policies interact with similar forces (50% each), the best decision is one of the expansionary strategies that help achieve their main objectives in the short and long term, represented by price stability and economic growth.

The main conclusion is that the best way to achieve the goals of economic policy in Iraq is that the coordination of procedures between the two policies should be expansionary, since the Iraqi economy needs to be stimulated due to the under-exploitation of many its sectors, such as agriculture and industry.

Keywords	policy coordination, decision-making analysis, cooperative games
JEL Classification	E61, D70, C71

INTRODUCTION

Fiscal and monetary policies coordination can be achieved through continuous interaction between the two authorities to jointly decide on various aspects related to policy implementation and development. This coordination is based on a set of procedures and rules. The determining elements of the most efficient policy choice for a country are shown via specific features and institutional development degrees (Laurens & Piedra, 1998, p. 5). As mentioned above, the fiscal and monetary policies coordination would result in avoiding tensions or inconsistency between those policies (Hilbers, 2004, pp. 2, 3).

The importance of coordination can be impacted by the fact that both monetary and fiscal policies can drive many different economic values, such as the level and structure of savings, employment, production, investment, the balance of payments, size of public expenditure policy

and its structure, size of taxes, type of the tax system, budget surplus or deficit. In addition to its financing, the level and structure of credits, the cost of credits, as well as the change in the quantity of money in circulation, these important determinants reflect not only the price level and exchange rate, but also employment and production structure in any economy (Šehović, 2013, p. 12).

In contrast, in the absence of coordination between the two authorities, monetary and fiscal, the monetary authority will focus on and target only inflation, leaving aside output targeting. Therefore, the goal of achieving stability by the fiscal authorities in an unclear manner and excessive borrowing to counter cyclical fiscal expansion will directly affect inflation, so it becomes imperative for the monetary authority to take restrictive measures to keep inflation at a desirable level, and this means an increase in the cost of doing business, which is reflected in creating a state of uncertainty for private sector investors in Iraq.

This lack of coordination is a research problem, since Iraq suffers from the lack of a common goal between monetary and fiscal policies (Khalid et al., 2007, pp. 441-442).

1. LITERATURE REVIEW

Monetary policy relates to the availability and cost regulation, as well as credit and money allocation in the economy. Fiscal policy relates to government programs of public spending and the resource strategy mobilization to meet such expenditures. Fiscal and monetary policies are in many ways closely related, although the two sets of policies sometimes differ in terms of transmission mechanisms, scope, and involvement of variables influencing time in the macro economy. Monetary and fiscal policies have an impact on the composition and level of investment, savings, employment and output, as well as external account viability. Taxation, magnitude structure and the level and pattern of public expenditures, fiscal deficit dimensions, financing sources, money supply changes, credit distribution, availability and costs are fundamental determinants of employment level and production structure, in addition to their crucial impact on exchange rate movements and price levels (Hanif & Arby, 2003, p. 3).

The impact of monetary policy on fiscal policy is represented by inflation rate and interest rates. Interest rate volatility and levels have affect inflation rate and fiscal position. Inflation rate can directly affect fiscal policy via debt sustainability and costs servicing. In similar manner, the impact of public finance is determined by volatility and level of inflation rates. Public finance will be extremely unpredictable when fiscal planning becomes extremely difficult.

Furthermore, high inflation rate reduces the actual value of debt obligations and increases tax burden. Fiscal policy has monetary impact. When fiscal policy is expansionary, aggregate expenditures and aggregate demand rise due to increased government spending or tax cuts. When government spending rises, the rate of economic growth will elevate, and hence policy like monetary restrictive policy will be required. Again, if fiscal policy is presented via unproductive government projects and a system of ineffective taxation, this negatively affects economic growth, which requires more restrictive monetary policy (Usman & Miraj-ul-Haq, 2016, p. 3).

Fiscal and monetary policy coordination is in line with the assumption that the main source of interaction between them stems from the fact that they both similarly affect inflation and demand of aggregation. Buti et al. (2001), analyzing the interaction between the both, concluded that such relationship should not be solely interpreted in terms of cooperation or conflict between fiscal and monetary policy; however, such a relationship should be seen as a dependent shock-type function that the economy faces, with coordination especially desirable in situations where the economy is facing supply-side shocks, while the opposite is true for shocks taking place in demand as an aggregate (Šehović, 2013, p. 8).

Blinder (1982) and Nordhaus (1994) viewed the problem of coordination as an example of how Nash equilibrium in a played game via

separate fiscal and monetary policy-makers might not be ideal from the society's point of view. Normally, when the game was repeatedly played, one might anticipate the Nash equilibrium to be supplanted through the superior equilibrium coordinated. Nevertheless, due to the horizon of fiscal authority or government constraints via the electoral cycle, it provides credibility in a coordinated difficult path (Chamberlin, 2015, p. 15).

Coordination helps reduce the problem of target instruments, is conducive to finance stability, transparency and credibility improvement of fiscal and monetary policies. Coordination is considered as a process by which two authorities are independent, namely the government and the central bank, negotiates strategies, initiates an environment where these authorities can effectively realize their policies. Lack of coordination leads to imperfect mix of policies, deteriorating policy outcomes, that is, due to disruptive fiscal factors (as excessive deficits budget and debt of public) or significant contractor monetary policy, which, according to various opinions, has been used recently in Poland (Marszałek, 2003, p. 47).

On the other hand, the failure to coordinate policies can have negative consequences for the economy, which can differ from financial instability leading to high interest rate, pressure on exchange rate, high inflation rate and poor economic performance. Blinder (1982) stated that the lack of coordination could be due to three basic reasons:

1) monetary and fiscal authorities have different goals towards the economy;

2) various thoughts of the two authorities regarding possible consequences of policy and monetary actions came from various economic theories; and

3) various forecasts of the state of the economy made by both authorities (Abdel-Haleim, 2016, p. 934).

Finally, the Game Theory can be used to consider the coordination between fiscal and monetary policies. This theory was developed by mathematicians and is applicable to mathematical and other sciences, representing strategic interaction between two or more aspects. The prisoner's dilemma can be the most well-known example in such theory, when the problem of interaction between two prisoners is solved. In the original prisoner's dilemma, the police interrogate two suspects in serious crimes in different rooms, where no one knows what is in the other room and what the other defendant is saying (Bošnjak & Perić, 2017, p. 77). Here, the suspects will have two choices. The first is confession of a crime, the second is denial. When both prisoners are not confessed, the police will not be able to convict them of crimes. When one of the prisoners confessed to a crime, they would be convicted. Thus, the prisoner's dilemma is that one of the prisoners confesses, and the other does not, the confessed prisoner will receive a much shorter sentence than the other prisoner, which is a confessing reward (Carmichael, 2005, pp. 58-59).

The suspects' choices equilibrium is determined by the Nash Equilibrium (NE), that is collecting strategies via (n) players, i.e. no player can improve the outcome simply by changing his strategy (Giocoli, 2004, p. 639).

In addition, prisoners' dilemmas disappear, as players as individuals have a strong desire to be strong in order to gain credibility, and hence they can play games like in the future. The main reason is that people voluntarily choose their partners (Tullock, 1985, p. 1076). The dynamic prisoner's dilemma over time does not exclude the benefits of mutual cooperation. As long as a player starting cooperation stops doing that, when the other does not reciprocate, in the long run, both get some benefit or both do not get any good from it, despite the fact that everyone gets little out of it compared to the time they could contrive, including the other to be the just one collaborator (Conybeare, 1984, p. 7).

2. METHODOLOGY

This investigation is based on data gathered from various official publications, namely the Ministry of Finance and the Central Bank of Iraq. Key data include inflation rate, economic growth rate, for-

eign exchange sales for the Central Bank of Iraq, and government spending for 2004–2019.

Methodology of deduction is used that focus on various software and methods to address the research problem. The first method relates to decision-makers (prisoner's dilemma) by building the Payoff Matrix between fiscal and monetary policies to find Nash Equilibrium. The second method is the Promethee-Gaia for multi-criteria decision making (Prvulovic et al., 2011, p. 779).

2.1. Assumptions

Under the established assumptions, the game was analyzed in relation to economic variables and influenced the state of the Iraqi economy through the instruments of monetary and fiscal policies. Hence, it was assumed that:

- money supply is endogenous when it is a dependent variable, while the gross domestic product is an independent variable, $Ms = f(GDP)$;

- increase in Iraqi Central Bank foreign exchange sales, ceteris paribus, causes decline in inflation (p) $(\partial p/\partial s < 0)$;

- increase in inflation rate (p), ceteris paribus, causes an increase in real growth rate (gr); and

- increase in government spending (g), ceteris paribus, contributes to an increase in inflation (p).

Since the impact of government spending (g) on real output growth (rate as real growth) (gr) in the economy is unclear, two options are considered:

1) An increase in government spending (g), ceteris paribus, causes an increase in real growth rate (gr) $(\partial gr/\partial g > 0)$; and

2) An increase in government spending (g), ceteris paribus, limits real growth rate (gr) $(\partial gr/\partial g < 0)$.

2.2. Equilibrium strategies through the interaction of fiscal and monetary policies in Iraq (Prisoner's Dilemma)

Ministry of Finance exchanges dollars from its own oil receipts for the CBI, buying I.D. to pay government operations. Part of these dollars is then sold by CBI at daily foreign exchange auctions. In such an auction, transactions were typically USD 170–USD 200 million per day at the end of March 2019 ending (Central Bank of Iraq, Foreign Exchange Selling Window).

In mid-2004, Iraq's economy was effective and dual-currency, where major consumer purchases were paid for and priced in US dollars. While I.D. is preferred for small transactions, USD is easily accepted. As a consequence, exchange rate fluctuations have a direct impact on the money supply, nominal and real, expressed as combination of US dollars and I.D. Currently, the Central Bank can conduct operations on the open market by trading in existing securities of the Ministry of Finance. Nevertheless, in the near future, the currency auction is likely to remain the main tool of the CBI's of monetary policy.

The authority payment function can be called as monetary and linear, and also obtained as a result of multiple linear regression using the following formula:

$$p = c + \alpha s + \beta g, \qquad (1)$$

where p – inflation rate, c – constant, s – sale of foreign currency for the Central Bank of Iraq, g – government spending/gdp, α – regression coefficient for foreign currency sales, and β – regression coefficient for government spending. Equation (1) represents the basic goal of Iraqi monetary policy aimed at minimizing inflation, reduced to a single decimal number. The inflation rate depends on foreign currency sales[1] by the Central Bank of Iraq rather than money supply or assisting local liquidity or interest rate due to two reasons: First, in Iraq, money supply has been endogenous since 2004, as

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1   Variation between the auction of currency (purchase and sale of foreign currency via Iraqi central bank) and the open operations of market, the 1st is dealing with reserves of foreign whereas the 2nd is dealing with securities as local, but there might be similar instruments mechanism used.

the Iraqi economy depends on oil revenues, which leads to the fact that net foreign assets as the main monetary base compared to local assets are a low contribution of the Central Bank of Iraq. Second, the financial system in Iraq remains seriously underdeveloped, rendering the interest rate channel ineffective.

Accordingly, the policy payment function is now mentioned, since the fiscal one is linear and is obtained as a result of multiple linear regression using the following formula:

$$gr = c + \alpha g + \beta p, \qquad (2)$$

where gr – real growth rate, c – constant, g – government spending, p – inflation rate, α – government spending regression coefficient, and β – inflation rate regression coefficient.

3. RESULTS

By processing data through Eviews10 software, a payment function was estimated for the monetary authority; the regression coefficients results for α and β were –3.262635 and 5.202887, respectively. In the same way, the payment function estimated for fiscal policy and the results of the regression

coefficients α and β, were 1.100294 and 0.404015, respectively.

Table 1. Payment function for monetary and fiscal authorities

Payment function for the monetary authority			
Inflation = –1.17 + –3.26635s + 5.202887g			
Std. error	2.498880	0.573087	1.228109
t-statistic	–2.45787	–5.69308	4.2365
Prob.	0.0289	0.0000	0.0001
Payment function for the fiscal authority			
Rgrowth = –8.20 + 1.100294g + 0.404015p			
Std. error	3.484413	0.439290	0.101305
t-statistic	–2.353723	2.504712	3.988115
Prob.	0.0223	0.0154	0.0002

After estimating the payment function for the fiscal and monetary authorities, the next step is to build a Payoff Matrix for both players (Fiscal-Monetary Authorities) that explains each payment for each strategy that the fiscal and monetary authority chooses in a given period of time.

Table 2 shows the changes in the fiscal and monetary policy from deflationary to expansionary. There are seven basic strategies for every policy, which means 49 strategies. There will be only one strategy at the intersection between them.

Table 2. Iraqi monetary-fiscal game – payoff matrix

Government spending		ICB Sales		Monetary policy													
				1		2		3		4		5		6		7	
				0.5%		2%		4%		5%		6%		8%		10%	
				Contractionary policy						Moderate		Expansionary policy					
1	0.5%	Contractionary policy	Inflation	–	**–3.93**	–	**–2.95**	–	**–1.97**	–	**–1.32**	–	**–0.67**	–	**0.63**	–	**1.94**
			Growth	–0.49	–	–0.09	–	0.30	–	0.56	–	0.83	–	1.35	–	1.88	–
2	2%		Inflation	–	**–2.37**	–	**–1.39**	–	**–0.41**	–	**0.23**	–	**0.89**	–	**2.19**	–	**3.50**
			Growth	0.47	–	0.86	–	1.26	–	1.52	–	1.79	–	2.31	–	2.84	–
3	4%		Inflation	–	**–0.29**	–	**0.68**	–	**1.66**	–	**2.32**	–	**2.97**	–	**4.27**	–	**5.58**
			Growth	1.75	–	2.14	–	2.54	–	2.80	–	3.07	–	3.59	–	4.12	–
4	5%	Moderate	Inflation	–	**1.27**	–	**2.24**	–	**3.22**	–	**3.88**	–	**4.53**	–	**5.83**	–	**7.14**
			Growth	2.71	–	3.10	–	3.50	–	3.76	–	4.03	–	4.55	–	5.08	–
5	6%	Expansionary policy	Inflation	–	**4.91**	–	**5.89**	–	**6.87**	–	**7.52**	–	**8.17**	–	**9.48**	–	**10.79**
			Growth	4.95	–	5.35	–	5.74	–	6.01	–	6.27	–	6.80	–	7.32	–
6	8%		Inflation	–	**6.99**	–	**7.97**	–	**8.95**	–	**9.60**	–	**10.26**	–	**11.56**	–	**12.87**
			Growth	6.23	–	6.63	–	7.02	–	7.29	–	7.55	–	8.08	–	8.60	–
7	10%		Inflation	–	**11.16**	–	**12.13**	–	**13.11**	–	**13.77**	–	**14.42**	–	**15.72**	–	**17.03**
			Growth	8.79	–	9.19	–	9.58	–	9.85	–	10.12	–	10.6	–	11.17	–

Note: Numbers in bold represent monetary authority targets (inflation rate); such values are in line with parameters (–3.26) and (5.20). Numbers in regular font represent fiscal policy objectives (economic growth); such values are in line with parameters (1.10) and (0.40).

It should be noted that such a matrix is calculated according to Iraq's actual information obtained using the payment evaluation function for both policies. To simplify, the monetary authority chooses the third strategy, which is considered as deflationary policy, to achieve its goal of reducing inflation. On the other hand, the fiscal authority chooses the fifth strategy as an expansionary policy to increase economy growth. Thus, the situation in the economy will be with inflation of 6.8% and growth of 5.7%. So, Nash Equilibrium can be determined in strategies (6,6) (7,7).

Now, after the first method has been completed, it is necessary to analyze the subject by building the Payoff Matrix for fiscal and monetary authorities. The second method will use the Promethee-Gaia for a multi-criteria decision method.

According to the Promethee-Gaia analysis, presumption (1) is a Policy of fiscal dominance. This implies that fiscal policy has more influence, and this means that its high effectiveness will depend on the inflation rate and economic growth, as well as on government spending.

Thus, the weighting coefficient for fiscal policy will be 0.7, and for monetary policy – 0.3. Figure 1 shows the results obtained with the Visual Promethee solution software (PROMETHEE I & II method).

For explanation, left column corresponds to Phi+ scores and the right one to the Phi– scores. Both are oriented so that the best results come up. If the line is on top for another, the corresponding action is good for both Phi– and Phi +. Such behavior is therefore is preferred for PROMETHEE I Partial Ranking. As soon as the two lines intersect, Phi– and Phi+ rankings change and therefore the two actions are incomparable based on the PROMETHEE I Partial Ranking.

Also, the highest rank presented by (strategies 6 and 7) means that the fiscal policy payoff is 10.6 (real economic growth) when both authorities choose a strategy combined of 6 and 7. With the same combination, monetary payoff policy is 15.72, which is considered the inflation rate. Expansionary policies of the two authorities represent a policy of equilibrium if the fiscal authority dominates economic decisions.

Similar results obtained by PROMETHEE II ranking are complete as illustrated in Figure 2. The upper half of the scale corresponds to posi-

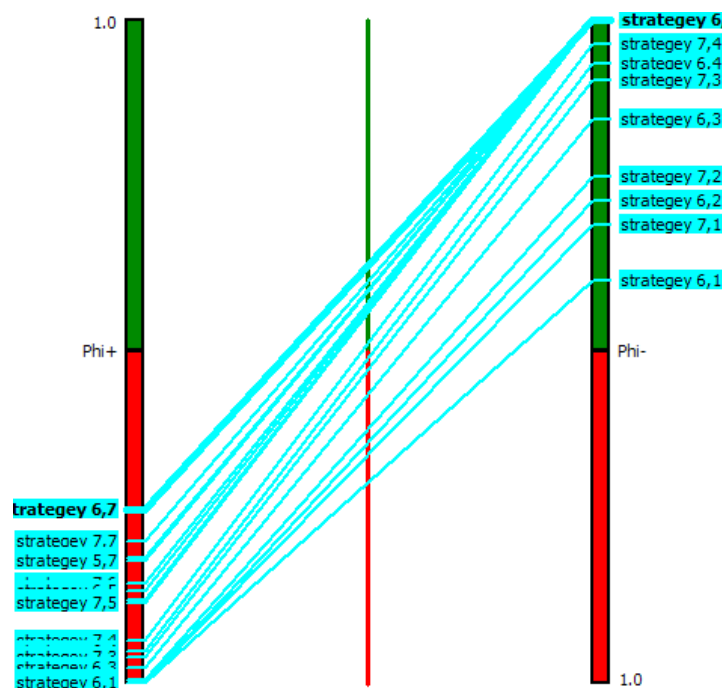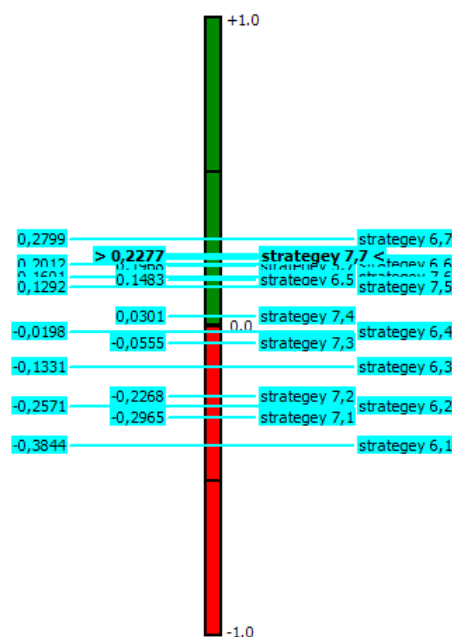Source: Visual calculations by Promethee software.

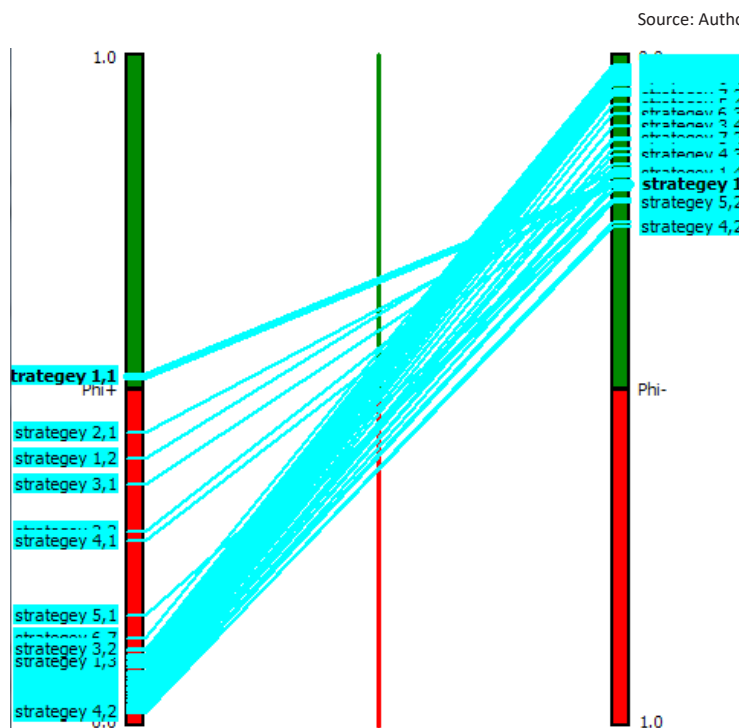**Figure 1.** PROMETHEE I at Assumption 1

Figure 2. PROMETHEE II at Assumption 1

tive Phi scores, and the lower half corresponds to negative scores.

Assumption (2) means the Monetary Policy Dominance. It is proposed that monetary policy has a higher impact on inflation rate and unemployment. Thus, the weighted coefficient for mon-

etary policy is 0.7, and for fiscal policy is 0.3. At such phase, the optimal choice is strategy 1, 1, as shown in Figures 3 and 4 by means of complete and partial rankings of PROMETHEE I & II. This choice is provided by a combination of strategies (1 and 1). Such a solution expresses the fiscal authority payoff of –0.49%, which is a real negative

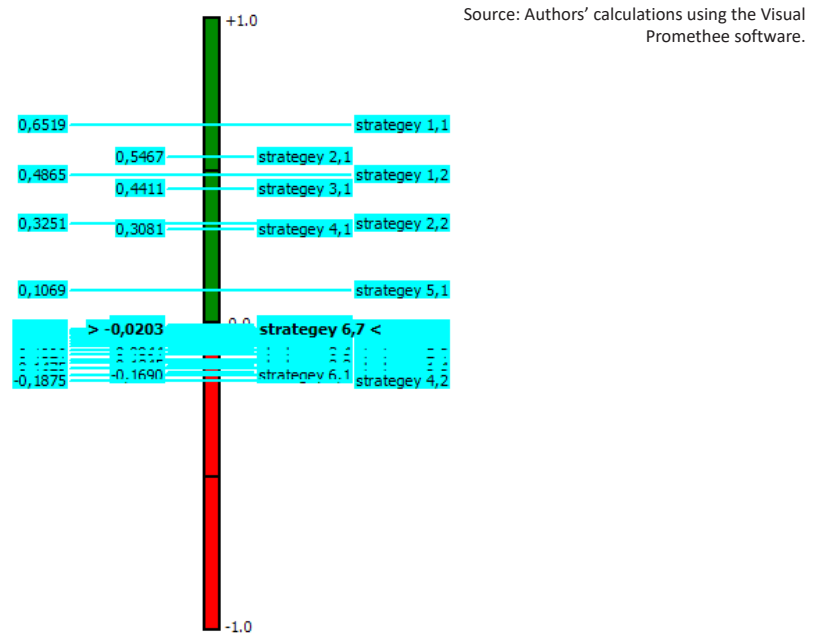**Figure 3.** PROMETHEE I at Assumption 2

Figure 4. PROMETHEE II at Assumption 2

growth rate. The monetary authority payoff is –3.93%, which means negative inflation. Based on that, the contractionary policy for the two authorities represents an equilibrium policy if the monetary authority dominates over economic decisions.

Finally, assumption (3) – a Cooperative Policy under assumption (3), where the fiscal and monetary authorities are equal; where there is cooperation between both in pursuing the desired policies. Hence, the weighted coefficient for monetary policy is 0.5 and 0.5 for fiscal policy.

The optimal choice at the third stage (cooperative policy) shows exactly the same results as at the first stage (strategies 6 and 7), which represents the fiscal authority payoff of 10.6 (real growth rates). With this combination, monetary authority's payoff is 15.72, which expresses the rate of inflation. Expansionary policy for two authorities is a policy of equilibrium if the fiscal and monetary authorities have equal powers to make economic decisions (see Figures 1 and 2).

4. DISCUSSION

To obtain the results, two approaches were used in the study. The first approach is to apply the game theory (the prisoner's dilemma), which has gone through

several steps, and also by going back to Table 1 and interpreting the results of payment function for fiscal and monetary authorities. Regarding the payment function for monetary policy and its interpretation in the economic theory, the interpretation of coefficients means that an increase in sales in foreign currency, ceteris paribus, causes a decrease in inflation by an average of –3.262635% points. Furthermore, an increase in government spending/gdp per unit, ceteris paribus, causes inflation to rise by an average of 5.202887% points.

This corresponds to the reality of the Iraqi economy, which lacks coordination of fiscal and monetary authorities.

For the payment function of the Iraqi fiscal policy in economic theory, the interpretation of coefficients means that an increase in government spending, ceteris paribus, causes an increase in growth rates by an average of 1.1002% points. Moreover, the positive sign of coefficient β is in line with economic theory, according to which an increase in inflation rate, ceteris paribus, causes an increase in growth rates by an average of 0.4040% points.

The estimates and interpretations are in line with the reality of fiscal policy in Iraq, where government spending is the government's most important tool and is largely dependent on oil revenues, but the type

of spending remains the one that will determine the recent impact on economic growth or not.

After completing the payment function estimates for both epy fiscal and monetary authorities, a payoff matrix was built (Mutual strategies between fiscal and monetary authorities (game)) (see Table 2).

Strategies (6,6) and (7,7) represent Nash Equilibrium(the gray cells) (obtained through Software of Gambit Solution). That is, Nash Equilibrium for fiscal and monetary policies is accomplished by expansionary strategy of both fiscal and monetary policies in order to determine the optimal strategy for the two policies.

The first approach proved that the ideal solution for both authorities is to expand economic activity according to their tools, taking into account coordination to maintain the general objectives of economic policy.

As for the results of the second approach, which was used to make the optimal decision presented by Promethee-Gaia, the results are consistent with those obtained through assumptions (1st and 3rd) in the Promethee method. The first assumption is the fiscal policy dominance in economic decision-making; this means that fiscal policy has greater influence on economic growth and inflation rate through government spending.

Thus, the weighted fiscal policy coefficient will be 0.7, and for monetary policy – 0.3. Figure 1 shows the results provided using the Visual solution software (PROMETHEE I & II). And similar results were obtained with the complete PROMETHEE II ranking. As illustrated in Figure 2, the upper half of the scale corresponds to positive Phi scores and the lower half to negative ones.

That is, in Iraq, the government is trying to raise its spending as public to cover its expenses as large operational, since the public sector is big. However, the political gain is represented by the influence of electorate. Monetary policy in Iraq, in turn, is expansionary due to the fact that money supply is endogenous in the fiscal activities of the government due to oil revenues received to the government in US dollars and foreign exchange with the Central Bank of Iraq, providing the money supply in the form of government revenue function.

The result under the third assumption is that the fiscal and monetary authorities have equal powers. They both work together to implement the desired policy. Hence, the weighted coefficient for monetary policy is 0.5 and for fiscal policy it is 0.5.

Cooperative policy (fiscal and monetary policy balances forces affecting economic activity) was similar to the first assumption (fiscal policy dominance), since equilibrium was achieved by expansionary policies. Although fiscal and monetary policies under assumptions 1 and 3 are quite similar, if the fiscal and monetary authorities have the same power to make economic decisions (Figures 1 and 2), there are still main differences between them. Under the first assumption, as a result of the dominance of fiscal policy, 70% of government spending is current spending, that is, it is not able to stimulate the economy as needed.

Under the third assumption (cooperative policy), similar strategies express economy equilibrium as an optimal solution. Increasing government expenditure ensures that investment costs and operating costs increase, which is a boost to the economy. Ultimately, the policy inflation rate will be optimal (15.72), which will not last long.

Under the second assumption, monetary policy is proposed to have a higher impact on inflation rate and unemployment, therefore, the weighted coefficient for monetary policy is 0.7 and for fiscal policy it is 0.3.

That is, if monetary policy dominates, affecting economic activity, adopting deflationary policy is the best solution; it is reflected in economic activity contraction, since monetary policy has a strategic objective represented by reduced inflation; this is illustrated in Figures 3 and 4 via PROMETHEE I & II complete and partial ranking.

Finally, this study indicates that the performance of general economic policy is better and more effective in Iraq when the coordination occurs between fiscal and monetary policies (cooperative policy), compared to if each policy receives its decisions as an independent policy.

Despite the various variables and goals, it is important to find ways to coordinate these policies,

and the results of such coordination in economic activity are visible.

During the decade of nineties, the Iraqi economy suffered from serious problems due to poor government management. And a failure to properly coordinate policies can lead to similar problems and negative influences on the economy, which may differ from financial instability as a result of high interest rate, exchange rate pressures, high inflation or poor economic performance, high public debt, permanent deficit of both current account and government budget.

CONCLUSION

Using more than one method for determining the ideal fiscal and monetary policies in order to diagnose the most realistic results confirmed the convergence between the Nash Equilibrium and Promethee method results based on the economic reality of Iraq. There is still a need to coordinate fiscal and monetary policies to achieve positive and desirable results. In turn, the coordination of the two policies will lead, in particular, to stimulating the real sector. Moreover, the emergence of coordination between the two policies will support the value of the national currency.

While there is actually a lack of coordination between the monetary and fiscal authorities in Iraq, and each authority strives to maximize its returns, monetary policy has been targeted and still strives for stability in the general price level, and fiscal policy is aimed at providing necessary expenditures to run state affairs. The most important thing is to achieve the goal of economic policy through coordination between them, and, as the results have shown, expansionist policies should be accompanied by an acceptable rate of inflation and government spending, which are characterized by productivity (investment).

The most important conclusion is that the economic reality in Iraq requires coordination between monetary and fiscal policies in a cooperative game, in the sense that decision-making must be coordinated between them, leading to the goal of real economic growth with moderate inflation rates that will disappear in the long run. Otherwise, failure to make a cooperative decision will lead to undesirable results, real growth will be below the target and inflation will be high, even if a contractionary monetary policy is implemented.

AUTHOR CONTRIBUTIONS

Conceptualization: Ahmed Abdulzahra Hamdan, Safaa Ali Hussein.
Data curation: Ahmed Abdulzahra Hamdan, Safaa Ali Hussein.
Formal analysis: Ahmed Abdulzahra Hamdan, Safaa Ali Hussein.
Investigation: Ahmed Abdulzahra Hamdan, Safaa Ali Hussein.
Methodology: Ahmed Abdulzahra Hamdan.
Writing – original draft: Safaa Ali Hussein.
Writing – reviewing & editing: Safaa Ali Hussein.

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