

AMERICAN REVIEW OF POLITICAL ECONOMY

Volume 1, Number 1

Kalecki's Microeconomics Reconsidered

Correa

Hitler's Money: The Bills of Exchange of Schacht and Rearmament in the Third Reich

Preparata

The Political Economy of Turkish-European Union Relations and the Macroeconomic Impacts of Full Membership

Bekmez and Genc

Editor:

Zagros Madjd-Sadjadi, University of the West Indies, Mona (Jamaica)

Managing Editor:

Enrico Marcelli, University of Massachusetts Boston

AMERICAN REVIEW OF POLITICAL ECONOMY

General Information

The *American Review of Political Economy* (ISSN number applied for) is published at least once a year and will consider expanding its publication schedule based on market demand as well as supply of quality academic papers. The current issue is available for free on the Internet. A policy for printing copies of the journal is currently in discussion. The journal's web page is located at www.ARPEJournal.com.

Editorial Board

An editorial board is currently being formed with representatives from all fields within political economy. Nominations for membership on the editorial board should be directed to ARPE@zagros.com or editorialboard@ARPEJournal.com

Statement of Purpose

The American Review of Political Economy seeks papers on a wide variety of topics within political economy, broadly defined. It welcomes high-quality articles from all perspectives in the discipline and especially is open to submissions from heterodox economists. It is a double blind peer-reviewed academic journal. Each issue contains 3-6 double-blind peer-reviewed articles on political economy.

Information for Authors

The *American Review of Political Economy* publishes papers in all areas of political economy, broadly defined. Manuscript submission and all correspondence relating to the contents of the *Review* is submitted in electronic form only. All manuscript submission fees are being waived at this time. Please submit completed manuscripts to ARPE@zagros.com or to manuscripts@ARPEJournal.com

Copyright

© 2002 American Review of Political Economy. All Rights Reserved. The reproduction, storage, or transmission of this work, in whole or in part, in any form or by any means beyond that permitted by Sections 107 or 108 of the US Copyright Law is unlawful without prior permission in writing of the publisher. Please note that all institutions and instructors may make photocopies for teaching purposes free of charge provided such copies are not resold. For educational photocopying requests that entail reproduction in a reader packet to be sold to students, please contact the publisher at ARPE@zagros.com or publisher@ARPEJournal.com for rates.

Forthcoming Issues:

Next Issue: Festschrift for John E. Elliott

Issue #3: Festschrift for Murray Wolfson

Currently accepting manuscripts for the above and for future issues

KALEÇKI'S MICROECONOMICS RECONSIDERED*

Romar Correa *University of Mumbai, India*

Kaleçki's microeconomics is recast in a strategic framework. The transformation is made in two steps. First, the relationship between capitalist and worker is modeled as a cooperative game. It is shown that the outcome is 'more favorable' to the capitalist than any other point on the payoff frontier. The game is then converted into a perfectly antagonistic game. The saddle-point is shown to be the outcome of a capitalist maximization problem (JEL B3, D74).

1. INTRODUCTION

We attempt a nonstandard analysis of Kaleçki's microeconomics. The motivation is provided by recent appraisals of the body of his work, which indicate that the economics of Kaleçki must be appreciated as a response to the historical conjuncture of his time (Halevi, 1992; Kriesler and McFarlane, 1993). The literature suggests that he sought to capture the emergence of the monopolistic corporation in Germany and the United States using the microeconomic tools at hand. In its organizational aspects, the large firm had a hierarchical structure, which was a response to a stable environment in which it was able to control the market. As a result, long-term planning and heavy investments were feasible. The use of specialized equipment led to the law of increasing returns. Once the production process had been designed for a specific commodity, unit costs declined with market size. Markup pricing permitted constancy in profit share with respect to value added. This mechanism allowed an increase in investment particularly when demand was increasing. Kaleçki (1965) would have described his efforts as the writing of an "econometric model". Such a model, in his definition, is an equation system in current and lagged values of the variables. A mathematical model cannot, he cautions, forecast the future values of the variables. "Historical materialism", on the other hand, is concerned with the (often) nonlinear transformation of modes of production as captured by formal structures into new modes of accumulation. The two methods of perceiving capitalist reality are perfectly consistent with each

* I am fortunate to have benefited from a set of sympathetic readers. First and foremost among them must be Amit Bhaduri whose comments went a long way in dumping the excess baggage of a first pass. Gilford Skillman was an unusually close reader of all aspects of the manuscript. His critique was instrumental in clearing up some ambiguities in an earlier draft. The comments of two referees led to a sharp update in the presentation. All remaining sins of commission and omission are entirely mine.

other. It is natural, therefore, to reconsider the microeconomics of Kalecki in the light of the new relations of production that characterize regimes of production in the developed world. National oligopolies everywhere are being destabilized through foreign competition, overcapacity in some sectors and, notably, new technologies. There is a premium now on small batch production. Product variety has taken the place of product differentiation. Industries need to constantly alter their products in response to changing tastes and in order to maintain their share of markets. In order to effect just-in-time production, the costs of hierarchical organization need to be cut. Conception and execution get reintegrated (Correa, 2000). In the new mode of regulation, workers and contractors become allies in production. Strategic planning at distant headquarters tends to vanish. The system becomes vertically disintegrated. We continue with this line of inquiry in the next section in the context of a discussion of the methodological underpinnings of the economics of Kalecki, concluding with the outline of a game between capitalist and worker. The problem is addressed in the third part of the paper. The conclusion follows.

2. THE METHODOLOGY OF KALECKI'S ECONOMICS

Marxian economics has been traditionally founded on the methodology of functionalism. Functionalism is the claim that certain correspondences hold based on repeated historical evidence in the absence of knowledge of the microfoundations of the correspondence. Roemer (1982) has characterized functionalist propositions as theorems about equilibrium states. Therefore, he concludes, the mechanisms of class struggle are relatively uninteresting here as class struggle is unimportant in equilibrium. The laws of motion of capitalism are expected to deliver results on, say, the rate of exploitation and relations of production at the workplace will conform. An aspect of functionalism is to posit purpose without purposive agents. In political economy it is the thesis that the functions of capitalists are both necessary and sufficient to explain their existence. The functions are those that are conducive to the accumulation of capital. Consider, for example, the truism that if prices are in a fixed ratio to the historic costs of producing output then prices in any period would be a constant proportion of the value of sales in that period. This result is consistent with a large set of theories about price-setting behavior (Godley and Cripps, 1983). If competition causes prices to settle at levels yielding a constant share of profits in the value of sales, then prices move as if they have been set by adding a constant average profit markup to costs. The proposition is an illustration of what Elster (1978) has called a structuralist argument, a mode of reasoning close to functionalist reasoning. The common core of both is that the beneficial consequences of a set of actions are regarded as explaining them. In the structuralist mode these agreeable results are transmuted into individual motives for actions. It is possible to commit the fallacy of division employing structuralist-functionalist reasoning. Elster (1978) has described the pitfall thus:

All members of A do x

When all members of A do x , this has the known and good results y

Therefore, all members of A do x to get y

This is the outsider's, the political economist's way of describing the matter, not that of the capitalist or worker. It could be, for example, that as a result of union militancy the share of labor income in the national cake increases. The outcome need not be the consequence of motivated planning or could be the outcome of an entirely different objective. In macroeconomics, this mode of theorizing has long been seen to be tautological. Usually some economic aggregate is divided into its component parts. National income, typically, is divided into profits, wages and raw material costs in macroeconomic models of distribution. These divisions are identities. Thereafter behavioral relations are posited between some of these sub-aggregates, which are alleged to explain them. The theory follows straightforwardly from the defined breakdown of the macroeconomic aggregates.

An approach that is distinct from functionalism is intentional explanation.¹ The method is deductive. An attempt is made to deduce historical observations from basic postulates on individual behavior. Class struggle and game theory, which is a natural language to discuss class struggle, are important components of this research strategy. Intentional explanation cites the intended consequences of behavior in order to account for it. Objectives sought may not be attained or may even be unattainable but in either case the explanans cannot succeed the explanandum. Thus, by setting high margins a firm only ensures a potential profit per unit of output. The accrual of profits depends upon the level of demand and costs over which the individual firm has no control (Bhaduri, 1986; Pen, 1971).

The polar positions sketched above are for the purpose of contrast and actual research practices of each side, typically, would be sensitive to the concerns of the other. If structural explanation simply means structural constraints, there would be no conflict in research designs. Structural constraints would include the given configuration of class interests and other objective facts of history as a framework within individuals are expected to make their choices. However, when to structural explanation is added what van Parijs (1993) calls a "structural imperative", the pure form of structuralist explanation delineated above applies. Here are demands which emerge from the mode of production and whose causal impact cannot be reduced to the agglomeration of individual actions. For her part, an advocate of intentional explanation might argue that the structural constraints of individual choice problems are the behavior of others, which might either constrain or enable. It would appear, then, that all social relationships dissolve into the properties of individuals. There is a problem of infinite regress here (Howard and King, 2001). While it is possible to

decompose a given set of structural constraints into individual actions, these actions will entail, in their turn, other structures and so on, ad infinitum.

It is not clear whether Kalecki's economics is intentional or functionalist (Elster, 1982).² Kalecki and Keynes are regarded as the modern founders of the analysis of the level of output as a whole. The progenitors were different, Marx in the former, Pigou in the latter. Keynes criticized the classical theory for committing the fallacy of composition, that is, deriving conclusions related to the economy based on individual choice. He was impatient with microeconomics. Kalecki, on the other hand, directly engaged with the formulation of imperfect competition and was concerned with integrating the analysis of prices with effective demand (Kriesler, 2002). The movement from one level to the other might not have been without its hazards (Skott, 1989). For example, his proposition that money-wage claims directly influence distribution is founded on microeconomic reasoning and cannot be extended to the macroeconomy. Increasing money wages in any given firm will make that firm less competitive and give its workers a rising real wage. The production of the firm is likely to decline. Other firms and industries will be stimulated and the net effect on output and employment might not be negative. Increased militancy and higher wages in any one firm will lessen the competitive pressure on rival firms. They may raise their profit margins leaving the overall effect on the share of profits indeterminate. Kalecki argued that an increase in worker militancy and money wages will (a) raise real wages and the share of wages in income and (b) stimulate demand leading to an increase in output and employment. The case for an increase in real wages depends, however, on the assumption that real demand falls if firms raise their prices *pari passu* with money wages. It is the inability of firms to compensate for rising wages that explains the power of trade unions to affect real wages. It is not easy to reconcile this argument with the view that rising real wages stimulate aggregate demand and employment.

On the one hand, there is evidence that Kalecki commits the 'sin' of what Elster calls "long-term functionalism", that is, manipulates the time dimension to support functionalist conclusions. He argues that this dimension of functionalism suffers from inconsistency because positive long-term effects can only dominate negative short-term effects in the presence of a purposive agent. In Kaleckian economics the key strategic variable is the level of capital expenditures derived from the investment plans of firms. Capital is regarded as autonomous and self-sustaining creating the microfoundations necessary for its continuance (Crotty, 1980; Weintraub, 1979). When an investment project presents itself, firms are able to adjust the prices of their existing output in order to get the profits they require to finance it. There is thus an implicit repudiation of theories of individual choice as explanations of the historical behavior of macroeconomic aggregates. The empirical long-term relationship between prices and unit costs has to be rationalized in microeconomic terms. On the other hand, over thirty-seven years of writing on the subject Kalecki incessantly sought to improve on his theory of investment behavior

(Kalecki, 1971). He regarded "the determination of investment decisions (to be) the central *pièce de résistance* of economics" (Kalecki, 1971, p.165). Again, he directed a Swedish period critique against Keynes' *General Theory* in his observation that Keynes' theory of investment is silent on the sphere of investment decisions of the entrepreneur who must make her calculations in a state of strong uncertainty. The theory only determines the *ex post* level of investment (Targetti and Kinda-Haas, 1982).

There is an emerging consensus in radical political economy today that neither pure functionalist accounts nor an individual choice approach unconstrained by systemic exigencies is adequate to encapsulate the complexities of capitalism. The middle ground recommended is the political economy of norms or institutions (Bowles and Gintis, 1993). *Régulation* theory is regarded as an umbrella under which most modern non-neoclassical research practices can reside. Individuals are regarded as occupying social niches that vary across time and space. In order to derive propositions it is imperative to establish a precise characterization of the network of constraints under which agents operate. An elaboration of this agenda in the context of Regulation Theory is Convention Theory (Thompson, 1997). Game theory in both its cooperative and noncooperative aspects is believed to be an ideal tool to employ in order to model conventions. Agents can only orient themselves through procedures that support collective arrangements. These arrangements are not governed by an individualistic calculus alone (Boyer, 2002a). They emerge from the construction and maintenance of a social bond. In the Marxian tradition, *régulation* theory takes off from the institutional forms that define a mode of production. These institutional forms socialize the heterogeneous behavior of agents, forging a passage from the micro to the macro. A meso level of explanation might be formulated thus (Taboso, 2001):

1. The assumption of rationality: Agents act rationally in a given situation
2. Description of the situation: Agent *A* is in type *C* situation
3. Institutional individual analysis: In type *C* situation, the rational thing to do is *X*
4. Explanandum: Therefore, *A* does *X*

Régulation theory sees the two extremes of arms-length relationships characteristic of atomistic markets and the strong coupling of hierarchical controls as near-extinct modes of organizing production. In their place various coordination alternatives are emerging to organize economic activity (Boyer, 2002c). For example, alliances are a mode of governance maintained through an implicit contract between the parties concerned while also obeying the laws of the market. Their advantage is that the participants

share the uncertainties associated with, say, the adoption of new technologies.

One leg of a progressive Kalećkian political economy then must be the postulate that class conflict is endemic to capitalist societies and is impervious to the distinction between short-run and medium-run analysis. The resilience of the capitalist mode of production is the result of the transformation of the wage-labor nexus. The wage-earning class has evolved as an adjunct to the imperatives of accumulation because it has modified the nature of class conflict. For instance, it is not sufficient to invoke the iron law of wages of Marxian economics. Consumption norms are endogenous (Boyer, 2002b). Under a certain configuration of competition, increases in the nominal wage may introduce a transformation in the life style of workers.

The second leg of a (re)vitalized Kalećkian economics is the strand that attempts to absorb the radical subjectivism of Keynes' *General Theory*. The familiar Kalećkian determinants of the markup like the compulsions of investment, the maintenance or increase of market share, barriers to entry and potential competition have received poor empirical support. Custom and convention are predominant among the modern determinants of the markup (Lee, 1998). Furthermore, the salient empirical fact about administered prices is the frequency with which they change. The frequency of change is not significantly different from the frequency with which wage rates or profit markups change. The markup varies from market to market at a single point of time and in a particular market over time. Here as well, the separation of short-period and long-period is unhelpful. The institution of pricing emerges when agents must function in evolving environments that are characterized by fundamental uncertainty. In such circumstances, it is reasonable to assume that if there is some data that recurs, firms are stimulated to work out simplified algorithms to deal with such contingencies when they arise. It would then not be necessary to incur the same information costs each time. Firms would prefer to adopt fixed responses to known stimuli than predict uncertain future events. Therefore, since information about costs is more reliably known to each firm than information regarding variations in the level of demand it is natural for a firm to evolve an institution that is more sensitive to costs than demand (Bhaduri, 1986). At the same time, institutions are "socially embedded" (Granovetter, 1991). They are constructed by individuals whose actions are both facilitated and coordinated by the structure of the networks in which they operate. In an oligopolistic industry, for example, cost changes are unambiguously coded and facilitate joint action. If a firm cuts prices due to a fall in its labor costs, competitors would not regard it as an aggressive price move. Changes in demand, on the other hand, affect firms unevenly. A price cut following a fall in demand would be resisted.

In like manner, according to the institutionalist model of the labor process, wage-determination and unemployment can be analyzed as distinct phenomena (Piore, 1979; Ulman, 1990). The kind of variations in market conditions that would reveal some information about the structure of

demand and supply do not exist. A regime of generalized unemployment would create excess supply in all markets. These surpluses are not included in the procedures through which these data are perceived. From the perspective of the agents, concerned institutions of price and wage setting represent the best interpretation of their environment. They do not see the market fundamentals from which these rules derive. The wage thus does not and cannot function to equate demand and supply. Unionists ignore the long-term effects of wage increases on employment through substitution by employers.³ The effect of unemployment on wages comes via the financial and market pressures that impair the employers' ability to pay. Outsiders discipline the wages of insiders in the long run through competition from new products, new technologies and new firms.

It seems appropriate, therefore, to assume that corporations maximize their return on their costs of labor. At any rate, as Williamson (1986) reminds us, the textbook distinction between fixed and variable costs is an accounting division. What matters for the signing of contracts is whether assets are redeployable or not. Many assets that an accountant would call fixed are, in fact, redeployable like general-purpose buildings and equipment. Some other costs that accountants would call variable have a large nonsalvageable part like firm-specific human capital. Labor should be treated like a relatively fixed factor of production for although direct labor costs vary with production it is not always possible to eliminate them proportionately when volume decreases due to union contracts. Instead of the Fordist pattern of investment firms are moving away from dedicated machinery and developing versatile equipment which can be switched from the production of one model to another even on a daily basis. The worker is expected to be generally trained as a result. Cooperation is critical in an environment where production is continuously being reorganized to adapt to the market or to incorporate technical change. The attainment of the goals of the firm is then essentially a problem of defining a mutually beneficial relationship between itself and its workers. It enters into contracts with employees with the promise of specific payments over short periods. Profits are what remain of the proceeds of sale or the net value of additions to inventory for a given period after these payments are made. If these contracts are mutually profitable then an equilibrium is reached at some level of activity.

In sum, relations of production under modern capitalism contain elements of both coercion and consent. The threat strategies commonly employed by workers and capitalists, strikes and lockouts respectively, are double-edged (Burawoy and Wright, 1990; Elster, 1985). They increase the probability of getting a larger share of the total but by disrupting production reduce the total to be shared. Capitalists therefore have an interest in the survival and reproduction of the labor force. Unless there are many equally attractive jobs available, layoffs and unemployment represent costs to workers. Indeed, if workers are parties to durable contracts and if they expect capitalists to share some of the gains of productivity in the form of wage increases, their welfare increases if the firm grows. The basic

assumption that capital is a ‘factor of production’ entitled to a return on par with labor is not in question. In this purely static setting the only basis for class struggle is the division of the net product not its existence (Elster, 1982). In such bargaining, each side has limits below which it cannot go like a subsistence wage for workers and a minimal profit for capitalists.

3. THE MICROECONOMICS OF KALEŃKI AS A GAME

KaleŃki’s microeconomics is similar in many respects to the conventional theory of a monopolist with given capital equipment. Constant marginal costs are assumed. The assumption is not unreasonable, he argues, because monopoly capital operates with some amount of planned or unplanned excess capacity. Therefore, output can be increased using additional units of labor and raw materials in the same technical proportions as before. The firm’s average costs are therefore assumed constant and equal to marginal costs over the range of output over which the firm is likely to produce.

It is possible that the assumption of a degree of monopoly, given in the short-run to be relaxed in the medium-run, is an assumption of the KaleŃkians. It turns out that KaleŃki was comfortable with the description of a capitalist economy as an arena of incessant competition and did not regard imperfect competition as fundamental to his theory of unemployment and the role of aggregate demand (Sawyer, 2001). For example, a change in average variable costs can result from a change in the price of labor and raw materials and such a change is possible in the short run. KaleŃki recognized that the power of trade unions can cause a change in the degree of monopoly. A high price relative to the wage rate strengthens the bargaining position of trade unions in their demands for wage increases since higher wages are then compatible with normal profits at a lower price. Therefore, a high ratio of price to the wage rate cannot be sustained without creating a tendency towards rising costs. This adverse effect on the competitive position of the firm compels it to adopt a price lower than the monopoly price. Instead of taking the price to be fixed, it is reasonable to assume, therefore, that it is a variable. The firm’s profit function associates to every price the value of the solution to the profit maximization problem. The profit function is convex in price. In a monopoly market buyers are price takers. Their demand as a function of price is given by the demand function $D(p)$. D , as usual, is assumed to be a continuously differentiable function whose derivative is strictly negative and finite at any positive price level. The objective of the union is assumed to be maximization of the total income of its membership. The firm is therefore a monopsonist in the labor market and is committed to a given endowment vector l . The optimization problem of the firm is to choose p to maximize its revenue function. We therefore have the following payoff functions of the capitalist and the union with the subscripts c and w distinguishing them respectively.

$$u_c \equiv pD(p) - wl$$

$$\text{and } u_w \equiv wl$$

The following account is drawn from Harsanyi (1977). We have a “simple bargaining game” in which the “conflict point” to which the players are reduced if they cannot agree on how to divide the payoffs between them is given. The union can set a wage so that the wage bill is equal to total revenue. The capitalist can set a price equal to zero choosing not to produce and thereby not enter into any relationship of production with the union. There is just one “conflict-payoff” vector in this case, $(0,0)$, that is, simple noncooperation. We confine ourselves to games with “binding threats”. The players announce their corresponding conflict strategies p and w at the beginning of the game. Thereafter the players are bound to implement them in case they cannot decide on which payoff vector to adopt. These “threat strategies” will therefore have to be completely credible rather than mere bluffs.

Assuming that the payoff point is an element of the payoff space and that the payoffs of both the agents are greater than their conflict payoffs, the Nash solution of the two-person bargaining game is given by the following result.

THEOREM (Harsanyi). The solution $u^ = (u_c^*, u_w^*)$ to the two-person simple bargaining game is the point satisfying*

$$u_c^* \cdot u_w^* = \max[u_c \cdot u_w]$$

Given the properties of the aggregate demand curve, the payoff function of the capitalist is strictly convex in output price while the payoff function of the worker is linear in the wage. The maximum for the capitalist is unique. In that case,

$$u_c^* > 0$$

$$\text{while } u_w^* \geq 0.$$

In other words, cooperation by the capitalist has “strong-reply dominance” over any other strategy against cooperation by the worker whereas cooperation by the worker only “weakly*ureply

optimization decree that workers can move out of the working class, workers are forced to sell their labor power (Elster, 1985). Relations of production are objective. The statement implies the following (Cohen, 1983). The worker is more intimately connected with her labor power than the capitalist is with her capital. When a worker sells her labor power she puts herself at the disposal of the capitalist and that is not true when a capitalist invests her capital. Insofar as workers have no feasible alternative to selling their labor power, they can be said to be coerced to sell their labor power. Capitalists, it could be argued, do have a feasible alternative to investing their capital. They are free to sell their labor power instead. There is a basis here for a critique of the defense of capitalism that commits the fallacy of composition, that is, argues that since an individual worker is free from an individual capitalist, workers are free from capital *an sich*. The game above has no noncooperative solution (Elster, 1982). In the intentional explanation provided, it is not assumed that the cooperative solution with the particular characteristics will be realized only because of the need for it; rather a causal mechanism is exhibited whereby it will be achieved. One of the modes of coordination as an alternative to state and market are institutional hierarchies (Boyer, 2002c). Due to the nature of economic coalitions at the heart of institutional compromises, some subset of collective actors can restructure the compromises in their favor. In any case, the determination of the wage, both real and nominal, is independent of the rate of exploitation.

The game is similar to a two-person zero-sum game (Harsanyi, 1977). This is because the solution always lies on the upper right boundary of the payoff space. Hence u_c^* and u_w^* are decreasing functions of each other.

Consequently maximizing u_c^* is equivalent to maximizing

$$y_c \equiv u_c^* - u_w^* = p^* D(p^*) - 2w^* l$$

Similarly, maximizing u_w^* is equivalent to maximizing

$$y_w \equiv u_w^* - u_c^* = -p^* D(p^*) + 2w^* l$$

The sum of the payoff functions is zero making the game a zero-sum game. Confining ourselves to combinations like (w, p) and (w^*, p^*) on the upper right boundary of the payoff space, we have

PROPOSITION 2. For $w \leq w^$, the perfectly antagonistic game (y_c, y_w) is a capitalist maximization problem.*

Proof. Let $\max_p y_c(p, w) \equiv y_c(p^*, w)$

$$\therefore y_c(p, w^*) \leq y_c(p^*, w^*) \text{ for any } w^*$$

For $w \leq w^*$ and noting that y_c is linear and decreasing in w , we have

$y_c(p, w^*) \leq y_c(p^*, w^*) \leq y_c(p^*, w)$, that is, the (saddle point) equilibrium of the game.

Once more, the result is an illustration of the structuralist fact that under capitalism freedoms like the freedom of workers to maximize utilities are no more than “formal” (Cohen, 1983). We also have a variation on the familiar theorem that under capitalism outcomes depend on the differential endowments of profit takers and wage earners. In the present case, the solution to the game depends on the shape of the payoff function of the capitalist. If outcomes do not depend on the initial endowments of the two protagonists (in this sense), all distributions of utility that sum up to a given level of utility can be represented by a line with a slope of -1 in outcome space (Przeworski, 1991). A perfectly egalitarian outcome is possible. This symmetric outcome lies at the intersection of the Pareto possibility frontier with the 45° line.

4. CONCLUSION

It has long been believed that KaleŒki's late article “Class Struggle and the Distribution of National Income” (KaleŒki, 1971) contains the seeds of a research program in KaleŒkian economics. We have attempted to deal with the subject using no more than the rudiments of a well-known language to handle problems of struggle. The argument is conducted against the backdrop of the methodological divide between functional and intentional explanation. The results show that the tension between the two stances can be nicely resolved. We argue that contemporary capitalism contains elements of both cooperation and perfect antagonism. In the cooperative mode, despite workers having the freedom to maximize their wages, the result of the bargaining game with capitalists is more favorable to the latter. In the classic case of a zero-sum conflict between the two classes, expectedly, workers merely solve a capitalist optimization problem.

ENDNOTES

¹There is a family resemblance between intentional explanation and the old Swedish period analysis wherein the outcome at a point of time is completely determined by

the actions taken during the period and the actions, in their turn, are derived from plans formed at an earlier point of time.

²No attempt will be made here to distinguish between KaleŃkian economics and the Economics of KaleŃki. For a scholarly study of KaleŃki's economics, the definitive work is Kriesler (1987). The distinction might be relevant for the present discussion. Agliardi (1988) takes the internal fund generating function of prices to be a postulate of the KaleŃkians. In KaleŃki's theory, on the other hand, an expansion in the bank credit supplied to the banking sector is a precondition for the independence of investment from saving. Agliardi suggests, in the spirit of the present paper, that the agenda implicit in the microeconomics of KaleŃki is the analysis of prices as "conventions" or "rules of thumb" in response to fundamental uncertainty.

³A consequence of functionalism is the nonstrategic role given to trade unions in Post Keynesian theory. Thus Rowthorn (1977), citing Marx's writings on the reserve army of labor, argues that even the unemployed tucked away in rural hamlets tend to demoralize trade unions. However, by definition, collective bargaining means that organized workers will tend to get wage increases at a higher level of unemployment than would have been the case without them. This is achieved by imposing restraints on labor mobility or by restricting entry into jobs that have to expand. Elsewhere there is more symmetry in the assumption about the powers of both agents in Eichner's (1976) view that both the typical firm and the typical union are powerful enough to carry on protracted struggles. It is only in the case of an unusually long strike that the stock of their respective resources will be considered.

REFERENCES

- Agliardi, E. (1988), "Microeconomic foundations of macroeconomics in the Post-Keynesian approach", *Metroeconomica*, 39(3), pp.275-297.
- Bhaduri, A. (1986), *Macroeconomics*, London: Macmillan.
- Bowles, S. and H. Gintis (1993), "The Revenge of Homo Economicus: Contested Exchange and the Revival of Political Economy", *Journal of Economic Perspectives*, 7 (1), pp.83-102.
- Boyer, R. (2002a), "A summary of régulation theory" in *Régulation Theory*, edited by R. Boyer and Y. Saillard, London: Routledge, pp.36-44.
- ____ (2002b), "Perspectives on the wage-labor nexus" in *Régulation Theory*, edited by R. Boyer and Y. Saillard, London: Routledge, pp. 73-79.
- ____ (2002c), "Is régulation theory an original theory of economic institutions?" in *Régulation Theory*, edited by R. Boyer and Y. Saillard, London: Routledge, pp.320-333.
- Burawoy, M. and E.O. Wright (1990), "Coercion and Consent in Contested Exchange", *Politics and Society*, 18 (2), pp.251-266.
- Correa, R. (2000), "Self-Organization Through Decoupling", *Discrete Dynamics in Nature and Society*, 5(1), pp.53-57.
- Crotty, J. (1980), "Post-Keynesian Economic Theory: An Overview and Evaluation", *The American Economic Review*, 70(2), pp.20-25.
- Eichner, A.S. (1976), *The Megacorp and Oligopoly: Microfoundations of Macrodynamics*, Cambridge: Cambridge University Press.
- Elster, J. (1978), *Logic and Society*, New York: John Wiley and Sons.
- ____ (1982), "Marxism, Functionalism and Game Theory", *Theory and Society*, 11(4), pp. 453-482.
- ____ (1985), *Making Sense of Marx*, Cambridge: Cambridge University Press.
- Godley, W. and F. Cripps (1983), *Macroeconomics*, Oxford: Oxford University Press.
- Granovetter, M. (1991), "The Social Construction of Economic Institutions" in *Socio-Economics: Toward a New Synthesis*, edited by A. Etzioni and P.R. Lawrence, New York: M.E. Sharpe, Inc., pp. 75-81.
- Halevi, J. (1992), "KaleŃki and Modern Capitalism", *Monthly Review*, 44 (2), pp.41-51.
- Harsanyi, J. (1977), *Rational behavior and bargaining equilibrium in games and social situations*, Cambridge: Cambridge University Press.
- Howard, M.C. and J.E. King (2001), "Where Marx was right: towards a more secure foundation for heterodox economics", *Cambridge Journal of Economics*, 25 (6), pp.785-807.
- KaleŃki, M. (1965), "Econometric Model and Historical Materialism", in: *On Political Economy and Econometrics: Essays in Honour of Oskar Lange*, Warsaw: PWN-Polish Scientific Publishers, pp.233-238.
- ____ (1971), *Selected Essays on the Dynamics of the Capitalist Economy, 1933-1970*, Cambridge: Cambridge University Press.
- Kriesler, P. (1987), *KaleŃki's Microanalysis*, Cambridge: Cambridge University Press.
- Kriesler, P. and B. McFarlane (1993), "Review Article: 'Micha³ KaleŃki on capitalism", *Cambridge Journal of Economics*, 17 (2), pp.215-234.
- Kriesler, P. (2002), "Keynes, KaleŃki and the General Theory", unpublished.
- Lee, F.S. (1998), *Post Keynesian Price Theory*, Cambridge: Cambridge University Press.
- Pen, J. (1971), *Income Distribution*, London: The Penguin Press.
- Piore, M. J. (1979) "Pricing Rules" in *Unemployment and Inflation: Institutional and Structuralist Views*, edited by M.J. Piore, New York: M.E. Sharpe Inc., pp. 144-149.
- Przeworski, A. (1991), "Could We Feed Everyone? The Irrationality of Capitalism and the Infeasibility of Socialism", *Politics and Society*, 19(1), pp. 1-38.
- Roemer, J. (1982), "Methodological Individualism and Deductive Marxism", *Theory and Society*, 11(4), pp.513-520.
- Rowthorn, R. (1977), "Conflict, inflation and money", *Cambridge Journal of Economics*, 3(1), pp.215-239.
- Sawyer, M. (2001), "Review Article: KaleŃki on imperfect competition, inflation and money", *Cambridge Journal of Economics*, 25 (2), pp. 245-261.
- Skott, P. (1989) *Conflict and effective demand in economic growth*, Cambridge: Cambridge University Press.

- Taboso, F. (2001), "Institutional individualism and institutional change: the search for a middle way of explanation", *Cambridge Journal of Economics*, 25 (6), pp.765-783.
- Targetti, F. and B. Kinda-Haas (1982), "Kalecki's Review of Keynes' General Theory", *Australian Economic Papers*, 21(39), pp.244-260.
- Thompson, G.F. (1997), "Where goes economics and the economies?", *Economy and Society*, 26 (4), pp.599-610.
- Ulman, L. (1990), "Labor Market Analysis and Concerted Behavior", *Industrial Relations*, 29 (2), pp.281-199.
- van Parijs, P. (1993), *Marxism Recycled*, Cambridge: Cambridge University Press.
- Weintraub, S. (1979), *Microfoundations*, Cambridge: Cambridge University Press.
- Williamson, O.E. (1986), "The Economics of Governance: Framework and Implications" in *Economics as a Process*, edited by R.N. Langlois, Cambridge: Cambridge University Press.

Contact Information:

Romar Correa
 Professor of Economics
 Department of Economics
 University of Mumbai
 Vidyanagari
 Mumbai 400 098, INDIA
 E-mail: romar77@hotmail.com

HITLER'S MONEY

The Bills of Exchange of Schacht and Rearmament in the Third Reich

Guido Giacomo Preparata *University of Washington, Tacoma*

*The economic recovery under Hitler stands as a remarkable feat of financial swiftness. Consummated in less than four years, the Nazi resurgence could vaunt by the end of 1938 the erasure of nearly eight million unemployed, the total absence of inflationary pangs, and the most ravaging army one could then conceive. The monetary contrivances behind such a conjuring of awesome potency were imagined by a team of traditional bankers, headed by Reichsbankpräsident Hjalmar Schacht. It is here argued that the financial underlining of the Nazi episode is but a variation of the famous 'monetary sleight-of-hand' that Mephisto played before the Kaiser in Goethe's **Faust**. Theatrical prophecy and war expectancy mix uncannily in this unique example of economic expediency achieved without the least concern for ideological etiquette. (JEL B0, E4, N0)*

Key Words: German Economy, Schacht, Nazism, Mephisto

Fiction...

Goethe wrote *Faust* two centuries ago. It has been claimed that the second part of the opus is a great allegory of modernity—a prophetic vision of the economic era (Binswanger, 1995).

So let the play begin.

The curtain is drawn, and we find ourselves in the spacious hall of the imperial palace. Court retainers, in a nervous murmur, confabulate nearby the throne, whereon the emperor sits in manifest despondency. Chancellor, treasurer and squires are about to address the sovereign. What follows is a chain of laments, disconsolate invectives, and worrisome accounts of the empire's conditions. Agonizing trade, agitated folks, loose soldiers turned by growing rowdyism into a mob of knaves, cocksure vassals laying claim anew to ancient pretensions, indifferent kings in the neighboring demesnes, destitution, debts and acrimony everywhere. The vaults of the treasury are empty, and the air is rife with spiteful allusions to the deadlines and usurious accretions imposed by the Jewish loan shark. The Kaiser looks about himself, weary, in search of his buffoon—may this last grant him a little respite. Where's the fool? Can't be found. The rumor has it that he fell down the stairs the previous day, and so soon was he borne away. Dead or drunk? No one knows for sure.

Silence and irresolution...But all of a sudden, slowly emerging from the shade, a personage steps forward. Whispers waft through the air fancying the apparition to be the new fool. And striding on, the visitor introduces

American Review of Political Economy, Vol. 1, No. 1 (Pages 15-27)
 December 2002

© 2002 American Review of Political Economy

himself with a riddle: “What’s cursed and welcomingly expected?”...Nobody ventures an answer, but no sooner has the emperor beckoned and bid him approach than the stranger goes up to station himself on the emperor’s left hand. “Another fool, for worries new!” cries the populace.

There is a dearth of money, laments the Kaiser facing the odd guest, can you procure it? The new buffoon reassures him: he shall do all they ask of him, and even more. That is a light task, but light things, he adds, are rather difficult.

The audience is acquainted with the plot: it knows that the new fool is none but Mephistopheles (or Mephistopheles, *he who shuns the light*) and that his plan is, by definition, diabolical.

The stratagem.

Mephistopheles draws the emperor’s attention to the fact that money—gold—is readily available: one only needs “to dig.”

To dig?

Just think, proceeds the demon, of all the wars fought upon the imperial soil, consider only the blood that was shed, the hordes of maddened warriors and haggard refugees treading the earth, and thus the terror that must have led the population to consummate the most instinctive deed of all: bury its wealth. There is capital, there, underneath—sunk deep in the imperial soil. And he concludes: the emperor owns the land, his is the capital.

The courtiers listen, struck. The treasurer concedes: the stranger, albeit a buffoon, argues rather cleverly. The Kaiser is impatient: Haste then! Show at once the golden places! Dig up the gold yourself, replies Mephistopheles, and reap the triumph.

Was it true then that a treasure trove lay hidden underground? Who can tell? Nobody’s ever bothered to unearth anything. Instead, paper is issued—the “fateful paper” (*das schicksalschwere-Blatt*). Issued in great haste so as to enable the Chancellor to proclaim aloud: “To all whom this comes, be it known: a thousand crowns in worth does this note own. It to secure, as certain pledge, shall stand all buried treasure in the Emperor’s land: and it is decreed, perfecting thus the scheme, the treasure, soon as raised, shall this redeem.”

The result is astonishing. Councilors gather round the Kaiser jostling one another, anxious to recount ever more detailed and wonderful accounts of the Mephistophelian stratagem. Trade reflourishes, folks begin to spend again: wine, jewelry and exchanges of all sorts; soldiers get their pay, inclusive of arrears, and new ones are drafted by the hour. The paper flies, spreading, as fire rapt by wind. Goldsmiths and bankers discount, rentiers collect and wenches live it up.

The economic miracle of the devil.

The story does not end here, though. This is but the beginning—the beginning of that process of expenditure and recruitment that patiently awaits that special time of reckoning: *war*.

Thus Faust, Mephistopheles and the Kaiser set out to launch their offensive expedition against the Anti-Kaiser. An expedition that began with the issuance of that strange and fateful paper.

...*And reality*

It is around March 1932 that unemployment in Germany reaches an historical peak. According to the official statistics there are more than six million idle hands. But contemporary observers, on the basis of different estimates, surmise that the figure is even greater: including those eking out a living by means of makeshift occupations, some go as far as putting joblessness at 8.75 millions (Fest, 1973, p. 353). This means that one out of four men is bereft of actual work. It is said that an idle man’s brain is the devil’s workshop. Is Germany about to become Mephisto’s business enterprise?

In September, in Lausanne, on the occasion of the international conference that would have led to the cancellation of the war reparations, the chancellor, the intriguing aristocrat von Papen, addresses the plenipotentiaries of the world: the golden epoch of Weimar has dawned, complains Papen, today Germany is the victim of the western powers’ indifference; gold is smuggled out of the country; nothing’s left but unemployment and the alienation of German youths (Kaes et al., 1994, pp. 80-82).

Meanwhile the movement of Adolf Hitler prepares for the second electoral round of the year. Votes are cast in November, and the National Socialists suffer a severe downslide: they lose two million voices; from that famous 37.3% scored in July, their percentage of the ballot falls to 33.1. The accounts of the party are in the red, for conspicuous amounts. Hitler confides to Goebbels that he is ready to blow his brains. In the meantime, Papen falls; General von Schleicher succeeds him. Then, an obscure but powerful banker, Kurt von Schröder, makes his appearance. His banking house affords connections of the highest degree that reach to the City and Wall Street. He has scars on his cheeks from the days of goliardic bravado and a mansion in Cologne. There, on December 4th, 1932, he meets Hitler and offers to stand as surety for his debts. Schleicher is forsaken; he resigns, and on January 30th, 1933, Adolf Hitler is sworn in as chancellor.

In 1924, after the extraordinary inflation, Schacht, a freemason, had risen from second-tier banker in charge of public relations to Reichsbank governor, thus eliciting indignant remonstrances from the German banking elite. President Ebert, the predecessor of Hindenburg, had him appointed, for the banker was *persona grata* to the British. In 1930, shortly before the tempest, Schacht, relying on intuition (or a tip-off), resigns from his post of *Reichsbankspräsident*, espouses the cause of the Nazis and starts to hustle round the world as an officious flak for the movement.

The Minister for the Economy in Hitler’s second cabinet is a man named Kurt Schmitt—an asset of the insurance lobby. In July 1934, Schmitt addresses an assembly of exporters; he opens his speech by asking, “What is to be done?” No time elapses before he swoons off the stand, senseless. A

month afterwards, Schacht, who since March 1933 is once again at the helm of the Reichsbank, succeeds him. On that occasion Hitler had summoned the banker to inquire whether he could procure large sums of money that would solve the unemployment question. Schacht had answered in the affirmative, and had been offered his former position. In August 1934, it is said of Schacht, who now wields the three charges (Minister for the Economy, governor of the Reichsbank, as well as Plenipotentiary for the War Economy), that he is the economic dictator of Germany. Long after the war, the banker would write in his memoirs that, at the time, to make Germany great and strong again, he would have joined the devil. *Schacht* in German also means “pit,” which, notoriously, receives no light.

Trials

In the severest phase of the Depression the authorities try to revive the economy by having recourse to a few expedients (Poole, 1939, pp. 29 and ff.). In 1932, under Papen, “tax certificates” are issued for the sake of entrepreneurs: taxes due *by* businesses *to* the Reich are forthwith transformed into certificates, which yield interest. The expected outcome of the operation is that of seeing entrepreneurs take these certificates to the market and, with the borrowed funds, expand plants and hire additional labor.

The sale of such securities on the money market turns out to be a failure, and those few who have succeeded in attracting a little liquidity, pursue aims quite different from those anticipated: 1) they lighten their debt burden, and 2) cut their selling prices, thereby aggravating further the general process of deflation.

The Reich has thus attempted to bail out businesses, by “spending” with the money owners its power to tax –that is to say, this certificate represents money that by law businesses shall remit to me, the State; but since these businesses at the moment cannot be burdened with further imposts, we ask you, money owners, to advance as against these certificates the cash needed to put the productive apparatus back on track. This measure would be conducive to the eventual taxation of the salvaged economy, and finally to the reimbursement of the *loan* (for that is what the whole operation amounts to), with the interest.

But money does not bite the bait: why on earth would cash be loaned with a view to reanimating economic activity, when prices plummet and the prospects of growth are worse than bleak? Money hasn’t bitten, as it hadn’t bitten the year before, 1931, when a special acceptance bank, the *Akzeptbank*, had been established, whose purpose it was to act as guarantor with the central bank for the dubious loans that had been granted by illustrious commercial banks to firms and other credit institutes (Born, 1967, p. 118). The central bank and important private banking groups contributed to the capital of the new bank; thereafter the Reichsbank discounted the guaranteed bills at a rate of 10%, which was marked-up with an extra 2%, as

a remuneration fee for the middle-role of the *Akzeptbank*. This was too costly a financing scheme to lead to any substantial process of recovery. Alone Germany goes nowhere, and the Anglo-Saxon clubs do not seem to confide any longer in Weimar, which, for all that, is their own creature.

But in those days some manage to accumulate formidable fortunes. Of course, much money is repatriated by foreign investors during the 1931 slump, yet much is the money remaining within the German confines. National income drops precipitately and unemployment soars, however, titles of ownership seem to be circulating and becoming ever more concentrated (Johannsen, 1975, pp. 11, 15): they pass on (at slashed prices) from bankrupt to silent and profitable concerns, such as the Reichsbank, which, although official data speak of moderate amounts, cashes in windfall profits in the midst of monetary chaos, thanks to the above-mentioned discount activity. This process of financial concentration continues; it lasts approximately three years, from 1930 to 1933, the year of Hitler. Then, as if materializing out of thin air, appears a host of “semi-public” financial institutes that begin to issue bills by broadsides of several billion Reichsmarks every year. Bills, which the central bank proceeds to discount, just as it had done in 1931; yet this time, neither lackadaisically nor with avariciousness, but on a vast scale and at a most generous rate. Thus begins the Nazi economic miracle –the so-called process of “work creation.”

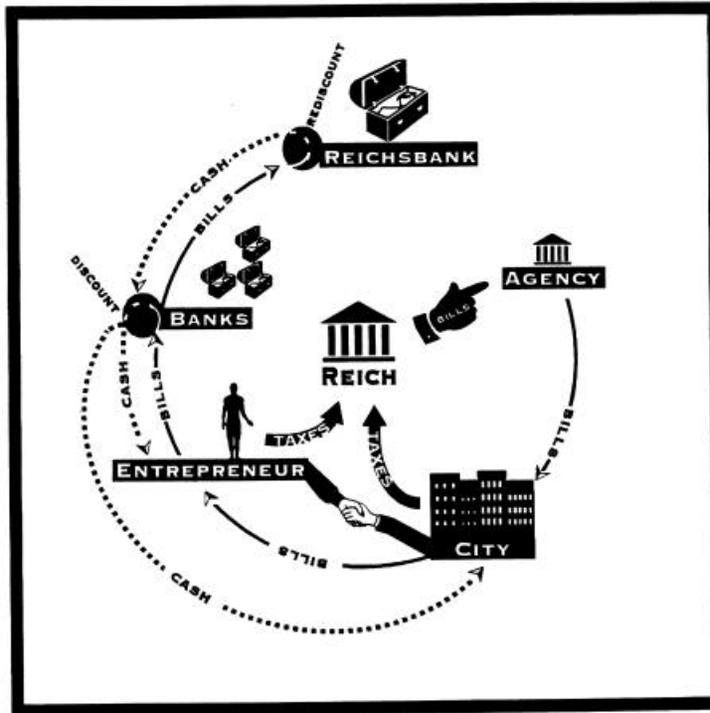
Work Creation

Oeffa (deutsche Gesellschaft für öffentliche Arbeiten), deutsche Verkehrskreditbank, deutsche Bau- und Bodenbank, deutsche Rentenbank-Kreditanstalt, deutsche Bodenkultur A. G., deutsche Siedlungsbank are the names of the principal “semi-public” credit institutes that operate stealthily behind the great Nazi recovery. The type of paper they employ to stimulate economic activity is the Bill of Exchange.

After the great inflation, the statute of the Reichsbank does not contemplate open market operations, nor does it allow the faculty to discount bills on behalf of the government. The only instrument against which the central institute is permitted to advance cash money is the commercial bill, for only this last, at least on a purely formal level, carries the guarantee that tangible wares are actually circulating, instead of virtual financial flows, which are a certain source of inflation. In 1933, by dint of this clause statutory prohibitions are outflanked (they will be abrogated the following year in the ambit of the consolidation movement, which is discussed below), and the legal outfit is at last cleared to accommodate imposing injections of monetary means.

The Bill of Exchange is a piece of paper by means of which an individual (A) orders a second individual (B) to remit a sum of money to a third party (C). The instrument thus embodies the dynamics of a credit: A is in this instance the Reich, which entreats the possessor of capital B (represented by the mentioned financial corporations) to pay German business, C, for the

commissions. If the engine is thus set in motion again, the economy can be trusted to be productive once more; taxes can be levied,



THE CYCLE OF WORK CREATION

and thereby public finances receive the wherewithal wherewith they honor the capitalists' bills, including interest charges. The basic mechanism is always the same.

The business receives the bill and deposits it in its bank with a view to getting good, rustling money in exchange –thus the traditional discounting transaction is consummated, whereby interest is subtracted from the amount inscribed on the paper certificate. This occurs for the bankers' money is sound, tinkling money, whereas the bill of exchange is nothing but a promise with limited powers of circulation. The option, for the commercial bank, to resort at all times to the Reichsbank for rediscounting these pieces of paper, renders the arrangement all the more fluid. The bills are

guaranteed –guaranteed by the power of taxation of the Reich, and by the tacit assent of the central bankers. Like magic, money becomes less expensive. In 1932, the official rate of discount was 5.21%; Schacht for the duration of his “dictatorship” will officially peg it at 4%.

Germany is liquid again. Still to this day, learned books allude to the “upswing” that had been in the offing for a few months, and whose wind Hitler luckily caught in his own sails. Fantasies. It is only after Hitler is invested chancellor and Schacht governor that money runs again. The Nazi economic reawakening is a willed feat.

Public Investments, Arms and Then War

The initial funds (Sofort Plan and Reinhardt Plan) are allotted for infrastructure. The bills take on the name of the type of project that they are meant to finance: e.g., “work-creation-bills,” “special highway-bills,” “land reclamation-bills.” Entrepreneurs cash in, have their paper discounted and pay the workmen. Banks turn to the Reichsbank, which starts to print paper money; with it banks repay the debts they couldn't honor during the slump, and fuel the recovery. Men find work again, they do not spend much; what they manage to lay aside is taken hold of by savings banks, with a view to channeling it within the selfsame circuit of state expenditure. Iron controls are imposed upon wages and prices. This is the regime of repressed inflation proper. It is known that Germany, save for coal and potash, is entirely dependent upon external sources for the provisioning of vital rawstuffs. Yet these somehow pour in the country, in spite of: 1) of the much discussed system of exchange controls initially decreed by chancellor Brüning (1931), and subsequently pushed to its extreme consequences by Schacht himself in 1934, on the basis of most rigid exchange restraints and multiple bilateral clearing agreements with peripheral agricultural areas (South America and the Balkans); and 2) the alleged, and intense, effort accomplished by the industry to derive synthetic substitutes for the war materials (the Ersatz).

In the Third Reich even statistical records are adumbrated by mystery. There is scant congruence among published data, and it is thus difficult to measure the extent and proportion of the German recovery of the nineteen thirties. However, it is a matter of unanimous recognition that in 1935 military expenditure amounts to approximately half of the entire governmental outlay. Thenceforth this share is bound to rise inexorably.

In 1934, something decisive comes to pass: Schacht meets the lords of German steel. Together they found the Metallforschungsgesellschaft, or MEFO (Research Corporation of the steel industry) –a fictitious corporation with a meager capital endowment (250 000 Marks), against which, from 1934 to 1938, 12 billion Reichsmarks worth of bills of exchange are issued for the first war commissions. The Mefo-bill is the true spark that triggers the process of rearmament.

The Mefo-bill is the bill of Mephisto: it rests upon virtual treasures –upon titles of ownership, which, during the twilight of Weimar, were amassed in

the sparse hands of those absentee owners, the new indisputable masters of Germany. The Mefo-bill is the fruit of a compact between the overlords and a tenebrous knighthood, between the highest German dynasties and the Nazis, who, with the monopoly of violence and the promise of war, fulfill two fundamental economic requisites: they ensure taxation and warrant the yield promised by the bill of exchange, respectively –that four percent stamped upon the paper. Namely, the price of gold, of money, which, in a world contorted by vehement protectionism, shall hopefully be repaid with the surplus forthcoming from the rapine of war. In fine the stratagem, Mephisto's legal-financial trick: the underwriting, the proclamation and the promise. A paltry equity base, a nonexistent corporation, the goodwill of German steel lords, the proverbial discipline and industriousness of the German, and the complicity of bankers and high world finance, which, through its own network, manages to convey the raw materials needed to equip with breathtaking swiftness a devastating army.

In less than four years, Hitler conscripts these armies, thus erasing more than seven million unemployed, improving somewhat the quality of life until 1939, and repressing even the least inflationary sigh. What did Schacht do to achieve all this? What did he put in that paper?

The Fateful Paper

1946, Nuremberg.

Prosecutor Jackson is spending much energy to frame Schacht, to humiliate him. He wants to prove to the world that the freemason is an integral component of the Nazi plot that led to genocide, that his Mefo-bills are an aberration, a filthy swindle. The allied inquisitors of the court watch the duel, with embarrassment. Schacht has no need of an interpreter; in a richer English than that of his accuser, the banker counters condescendingly Jackson's inflamed, yet toothless theses. Francis Biddle, another American judge, shakes his head as he jots in a pad that Schacht is far too clever for the prosecution. Jackson broaches the financial question and proceeds to founder, slowly; he waxes implacable, to no avail –he does not want to face the fact that Schacht is an untouchable (Conot, 1983).

In England, it is with sheer enthusiasm that more than a few influential onlookers had witnessed the flux and reflux of Schacht's bills. Like that famous Lord Keynes, appointed Director of the Bank of England in 1940, who, just four years earlier in a book still idolized to this day, had portrayed the bizarre fresco of an ailing, nondescript, economy conquering sanity by means of potent monetary injections (Keynes, 1973). Schacht will avail himself of the British accolade to his financial legerdemain on more than one occasion –for instance, in Nuremberg, and in those apologetic treatises of his, wherein he describes the working of the Mefo-wechsel.

His paper, admits the banker, is indeed a promise, but it is as good as money, by virtue of its interest-yielding capacity (at 4%) (Schacht, 1967, p. 114). This should explain why the German market of the thirties, already deeply mistrustful of state financial policies, eventually opted for a prompt

absorption of the bills. But the argumentation is purposefully confusing. The Bill of Exchange is not money proper. It is a poor substitute thereof: the paper promise mirrors wares that decay, something which gold, true money, never experiences; nor does simple commercial paper imply direct access to the privileged network of banks, which move the resources of the world. By reason of these two economic verities, one is induced to pay a price, interest, to lay hold of the "good" means of payment –the imperishable one, bank money. Should the possessor of money not be assured of the certainty of the yield, of interest, money ceases to circulate. Thus begins the crisis, with money vanishing underground.

But the exaction of interest is associated with a number of problems, whereof bankers are fully aware. These problems arise within the loan. Two difficulties are bound to come soon into view. The first one concerns, for instance, the reimbursement of a piece of equipment that has been purchased with loaned money. If the good costs 100 and perishes in 10 years (which implies a depreciation rate of 10%), the entrepreneur can safely presume to be acquitted from his obligation if he pays a depreciation allowance (the "amortization" payment) of 10 per annum, for ten years. Yet, according to traditional lending, the banker demands the 10 installments (of 10 each for a total of 100), marked-up with an x%, which represents the interest addition (or, which amounts to the same thing, he claims 10 annual interest payments, plus the entire sum of the loan, which he will collect as the contract expires). This is so, for the parties anticipate an increase of physical productivity from the employment of the new machinery (i.e., larger manufactured output for a given set of input factors) –an increase that will allow the borrower to pay the price of money (interest), with the proceeds of his sales. However, on the aggregate level (i.e., considering all firms a single productive unit, and excluding international trade), it is not clear how producers, by selling their commodities to the public, can secure the monetary equivalent of this additional x%, if it isn't put into circulation by the banker himself in the form of a further credit extension, burdened by a supplementary layer of interest –which is what customarily happens.

The second snag –an offshoot of the previous difficulty— lies in the relationship between the mentioned productivity increase and the stability of prices: From the viewpoint of the individual firm, if technologically-enhanced production (by means of the new machinery acquired with borrowed money) entails an uncontrollable expansion of manufactured wares, the immediate outcome, through the agency of a saturated market demand, is a dramatic decline of the selling price. From a plummeting price it is ever more difficult to deduct the interest component, wherewith the loan is to be repaid. It is for this reason that banks in the medium-long term fear innovation. When prices fall, credit is broken off.

Transactions are further complicated by a third incongruity: the eventuality that the complex industrial process, starting with the baking of bread and extending to the assembling of sophisticated instruments, may be controlled in its various stages by rival and independent banking affiliations, which thus tend to overload payment flows with additional doses of interest.

Hence, three problems lie in wait for a solution: 1) free the economy from disproportionate financial overhead charges; 2) render the financing procedure of the private banking sector a more coherent undertaking; 3) find an outlet for the enormous productive potential of modern industrial systems, so remuneration, profit and interest are not wholly eroded thereby.

It is up to the Reichsbank to make the opening move if objective number one is to be attained. By rediscounting the bills forwarded to it by credit institutes, the bank of issue ministers the decisive shot of liquidity to the system. Part of this monetary mass goes to settle the debts incurred by slump-stricken businesses (banks and firms), part is employed to boost the economy. The advent of Nazism coincides with a veritable jubilee: the record shows the virtual annulment of all private debt. As to the demand for money, the injection of this potent flow of purchasing power is reflected by an instant contraction of the rate of interest, which is promptly aligned with that of Schacht, at 4%. Then enter the Nazi economic Ministries; all their attention is focused upon the industrial sector: first of all, they encourage a strong concentration of all main concerns; there follows the capital concession: the so-called Preisfinanzierung (financing by prices). The Reich places the order for goods and construction, and agrees to a price that, in addition to entrepreneurial profit, includes an accelerated depreciation allowance (that is, a stipulation under the pretense that equipment perishes ahead of time), which is tantamount to the total remission of interest, and to the concession of a bonus, which firms will devote to the expansion of plants (self-financing scheme). In 1937 the ratio of interest charges to sales for business bottoms out at 0.40% (Lurie, 1947, p. 158).

The second incoherence is remedied by dividing the process of monetary creation into primary and secondary credit. Primary credit is the original injection of money in the market. The execution of such a maneuver is, under Schacht, the sole and exclusive privilege of the central bank, the exercise thereof being subject to the official order of the Reich (the empire's publican) and to the guarantee vouchsafed by the semi-public financing corporations (the capital). Secondary credit accompanies the injected monetary mass along the different channels of the productive apparatus (households and businesses); this becomes the enfranchised area of credit and financial institutes. Thus banks are relegated to the mere discounting function: they still hold the usufructuary right to exact interest against the bills tendered by the Reich, yet they have to forego the far more important prerogative to ordain the nature and direction of all investments, as well as the copious rents obtainable therefrom (Barkai, 1990, p. 213). These, instead, are appropriated by the Reich, which, in turn, cedes them to businesses with the Preisfinanzierung. It is the duty of savings unions and insurance companies, which do not rely on the perilous leverage of the deposit multiplier, to channel bank-discounted money saved by millions back into the programs of public expenditure. By repressing consumption, the production of weaponry is intensified, and the original loans are transformed from short to long-term engagements: consolidation is initiated. Germans are now told that the money they laid in is being immobilized –

maturity dates of Reich securities are gradually postponed (28 years for the initial Reich bond auction of 1935). War will settle all accounts payable. Meantime, the economy pushes on –it grows by 9.5 % per annum for the quinquennium 1933-1938; Nazi bills are initially paid off with tax proceeds, but in the course of consolidation, financial authorities end up by paying only interest on the lengthened loans (putting off the reimbursement of the principal until the end of war): it looks as though the whole endeavor is pervaded with the lightness of a zero-interest loan (that in which only annual depreciation allowances are paid). Hitler has blind faith in his divisions. So do his financial backers, seemingly.

Finally, the abundance of modern industrial systems, which translates in an overall diminution of the price level, and which fails to comply with the logic of profit. What to do with it? (Veblen, 1978, chapters 4 and 5) Visionaries advocate the transformation of all economic surplus in gifts, for the arts, poetry, sculpture and science (Steiner, 1993, p. 149). Money distributed to the artists of the gift marks the death of the fateful paper, which has consented the offering of such a gift. But Mephisto's paper seems made to last, for the loan of the absentee owners is no zero-interest grant; Schacht helped Hitler by alluring back to the surface those pecuniary hoards that had been concealed for three long years, in order to finance the war at 4%. Meanwhile, the money owners have collected interest; they'll have to wait for the end of the conflict in the East –such is the understanding— to get their own capital back. Double perversion: perversion once, because what ought to be given away, the surplus, is offered for sale; perversion twice, because the gift betokens life, whereas the expenditure of the Third

percentage), so that it is thereby forced to circulate, and in which the only way to escape decay is to invest the money in productive enterprises at a null rate—is the necessary and sufficient condition for solving most traditional economic evils, are alarmed. Mephisto's paper, which has accompanied the German economy in its fiery Hitlerite race, has not changed hands gratis, but it has been traded at just 2.81%; it hasn't been hoarded, but always kept in motion by the savings unions; it has faithfully reflected the life-cycle of the durable goods, which it helped finance, and it has somehow simulated, with the deferment of all refunds to the end of the war, a zero-interest loan. Never underestimate the devil.

The provisioning of "wholesome" money is not sufficient, just as innovating or showering the notion of "general interest" with tearful meditations cannot be enough—the key is in the gift, in all that which it evokes: the possibilities, the respect of time, the aspirations of the soul, and the need to know something more about man himself. Not about his rationality, conscience or principles, but about the necessity to sacrifice all this to something higher, as had been written by the young pastor Dietrich Bonhoeffer—a martyr of Nazism.

REFERENCES

- Barkai, Avraham (1990). *Nazi Economics*. New Haven: Yale University Press.
- Beck, Earl R. (1955). *Verdict on Schacht: A Study in the Problem of Political Guilt*. Tallahassee: Florida State University.
- Binswanger, Hans Christoph (1995). *Geld und Magie. Deutung und Kritik der modernen Wirtschaft anhand von Goethes "Faust."* Stuttgart: Weitbrecht.
- Born, Eric K. (1967). *Die deutsche Bankenkrise 1931: Finanzen und Politik*. Stuttgart: R. Piper & Co. Verlag.
- Conot, Robert E. (1983). *Justice at Nuremberg*. New York: Carroll and Graf Publishers Inc.
- Fest, Joachim C. (1973). *Hitler*. New York: Vintage Books.
- Gesell, Silvio (1920). *The New Economic Order*. San Antonio: Free Economy Publishing Co.
- Goethe, Johann Wolfgang (1924). *Faust*. Translated by Bayard Taylor. New York: Houghton Mifflin Company.
- Highham, Charles (1983). *Trading with the Enemy, an Exposé of the Nazi-American Money Plot 1933-1949*. New York: Delacorte Press.
- Johannsen, N. J. (1971). *A Neglected Point in Connection with Crises*. New York: Augustus M. Kelley Publishers [1908].
- Kaes, Anton, Jay Martin and Edward Dimendberg, editors. (1994). *The Weimar Republic Sourcebook*. Berkeley: The University of California Press.
- Keynes, John Maynard (1973). *The General Theory of Employment, Interest and Money*. London: Macmillan and Co. [1936].
- Lurie, Samuel (1947). *Private Investment in a Controlled Economy*. New York: Columbia University Press.
- Nathan, Otto (1944). *The Nazi Economic System*. Durham: Duke University Press.
- Northrop, Mildred B. (1938). *The Central Policies of the Reichsbank, 1924-1933*. New York: Columbia University Press.
- Poole, Kenyon (1939). *German Financial Policies 1932-1939*. Cambridge: Harvard University Press.
- Schacht, Hjalmar (1968). *1933: Wie eine Demokratie stirbt*. Düsseldorf: Econ-Verlag.
- Schacht, Hjalmar (1967). *The Magic of Money*. London: Olbourne.
- Schacht, Hjalmar (1955). *My First 76 Years*. London: Allan Wingate.
- Steiner, Rudolf (1993). *Economics, The World as One Economy*. Bristol: New Economy Publications [1922].
- Veblen, Thorstein (1978). *The Theory of Business Enterprise*. New Brunswick, New Jersey: Transaction Books [1904].

Contact Information:

Guido Giacomo Preparata
 Assistant Professor of Political Economy
 University of Washington, Tacoma
 Interdisciplinary Arts & Sciences 358436
 1900 Commerce St
 Tacoma, WA 98402
 Email: ggprep@u.washington.edu

THE POLITICAL ECONOMY OF TURKISH-EUROPEAN UNION RELATIONS AND THE MACROECONOMIC IMPACT OF FULL MEMBERSHIP*

Selahattin Bekmez *University of Idaho and Mugla University*
Ismail H. Genc *University of Idaho*

This research considers the effects of Turkish entry into the European Union by comparing the impacts of different scenarios. To model the impacts of these scenarios we made use of a general equilibrium modeling framework. The model considers the changes in different macroeconomic indicators and has two important specifications: imperfect competition in the Turkish manufacturing sector and differentiated factors in the production process. The results indicate that full membership appears to be the most beneficial scenario for the Turkish economy. However, the political sensitivities may complicate the efforts to employ appropriate economic policies suggested in this research. (JEL: F150)

Key Words: Political Economy, General Equilibrium, European Union, Turkey

1. INTRODUCTION

A customs union agreement with the European Union (EU) in 1995 raised important questions about the impact of prospective economic integration between Turkey and the EU on the involved economies. Questions centered around the necessary changes both sides have to go through, such as adopting new rules and regulations on the part of Turkey to make Turkish legal and economic system more compatible with that of the EU. They also focused on creating flexibilities around certain regulations on the part of the EU to make the transition easier on Turkey. Equally important were issues regarding the gains and losses each side might incur because of the integration or forming a customs union.

There are the apparent macroeconomic impacts of such a move on the economies in question. Any interaction or a movement in that direction, however, would also require convergence in social and political matters as well. The decisions to join/grant participation carry an undeniable political component which politicians tend to exploit to further their own objectives.

* We thank anonymous referees for their valuable suggestions that helped us to improve the quality of our work. Also, the senior author (Selahattin Bekmez) gratefully acknowledges the financial support provided by Mugla University during preparation of this manuscript.

Even if the desire of the Turkish politicians is to join the union, their efforts during the period immediately preceding full membership has tremendous effects on the eventual decision of the EU in granting full membership status to Turkey. This makes interim period decision making rather crucial for politicians in Turkey as a way to gain access to the union.

The primary transition period adjustment the EU requires of candidate countries is the establishment of "fiscal discipline," the lack of which cripples not only transition economies such as Bulgaria, Romania, and the Slovak Republic, but also most market economies such as Turkey, Pakistan, and Egypt. High fiscal deficits are a primary difficulty (Diao et al., 1998) coupled with government budget deficits, creating the "twin deficits" phenomenon. In the case of an insufficient domestic savings pool, foreign capital must fund the investments. However, countries experiencing a current account balance deficit have difficulty attracting new foreign capital unless they offer higher interest rates or tax breaks or a combination thereof to attract it. Complications arise regarding the source of foreign capital when unification is an issue such as the requirement to stick to common monetary and fiscal policies between Turkey and the EU. Integration is likely to affect such macroeconomic variables as imports, exports, price and investment levels, wage rate, and population. The EU is progressing towards a common monetary policy for its members and expects candidate countries to be compatible with the current member economic standings by the time they are eligible for full membership; hence taking away one policy instrument from candidate countries to correct economic problems. Since fiscal policy is not an answer to all economic questions, especially the ones needing immediate attention, the EU would like to make sure candidate countries have sound fiscal policies before they surrender their monetary independence. Since all these issues are closely related to the budgetary and fiscal independence of a country, a pre-evaluation of such policy decisions should be carefully made. Appropriate forecasting of such policy consequences will improve current and future policy making capabilities of the countries involved. These decisions are also important characteristics in terms of achieving a fair inter-generational resource allocation.

Many of these issues are addressed in the theoretically constructed model of Diao et al. (1988). It is a complete analysis, utilizing a multi-sector general equilibrium model of Turkey's fiscal harmonization process. The study focused on the effects of fiscal debt and trade liberalization on foreign trade, capital accumulation, and the growth rate of Turkey. They used three different experiments. The first evaluated perfectly coordinated fiscal and trade policies, which means all tariffs are eliminated and income tax rates adjusted in order to compensate for tariff revenue losses. Thus, government revenue will be the same. In addition, it was assumed that trade reform has no effect on government expenditure. The second experiment considered reduction of tariff rates and increased wage rates, but delays revenue enhancing policies, such as an increase in the income tax rate for 20 years. The third experiment is the same as the second except the delay in revenue

enhancing policies is 40 years. The results indicate the longer the delay in fiscal policy adjustment, the more harmful tariff liberalization will be.

As part of the adjustment to full membership, the EU considered vital the economic liberalization and harmonization of the Turkish system with that of Europe, forcing Turkey to search for suitable policies. Harrison et al. (1993) defined three types of liberalization options for the Turkish government: across-the-board liberalization, sectoral liberalization, and tariff harmonization to the EU's common external tariff (CET) policy. Turkey went through a comprehensive liberalization process in 1980s (Genc and Sahin, 2001) to boost its chances to be perceived as a compatible candidate for eventual membership. However, problems emerged with respect to the definition of harmonization. Harrison et al. produced different results using different interpretations of harmonization, which is understood by Turkey to reduce tariffs to zero but still allow certain import surcharges on EU products. However, the EU's interpretation is to reduce both tariffs and import surcharges to zero. In this case, harmonization of tariffs is welfare enhancing for Turkey if its interpretation is followed, but welfare-reducing if the EU's interpretation is followed. Moreover, Harrison et al. (1993) claimed that harmonization of tariffs will have very little beneficial effect on Turkey's economy. In order to be successful in liberalization policy, it is important for Turkey to use an export subsidy reduction policy combined with a tariff harmonization policy. We might generalize this result and say that the success of the trade policy reforms depends crucially on reductions in both tariffs and export subsidies. The main conclusion of Harrison et al. (1993) was the fragility of the first-best rule. It is not the case that any partial movement toward the first-best trade policy for Turkey will result in some fraction of the welfare gains from that first-best package. Of course, this is a restatement of the well-known "second-best" rule.

The acceptance of Turkey to the Customs Union, a prelude to the full membership in the future, opened another discussion regarding tariff harmonization. By reducing tariff rates, Turkey will be losing its tariff revenues, but gaining the trust of the EU countries. Is this really beneficial for Turkey? Yeldan (1997) used two types of analyses to capture the welfare implications of a customs union: (i) the implementation of a tariff harmonization program for a customs union, and (ii) the impact of joining the single European market. When Turkey joins the EU, non-tariff barriers will automatically be removed as well as tariff barriers. This will prevent import and export arbitrages, and the firms in both sides of the aisle will be forced to use a single price, in which case, the exclusive role of determining the welfare effects of harmonization will be vested in the price system. It may be a concern to policy makers in situations where price system fails to distribute works the benefits of the integration perfectly across all participants of the market activity in both Turkey and the EU.

In this paper, we analyze the effects of Turkey's accession into the European Union on the primary economic indicators of the Turkish economy. In the following section, we provide a comprehensive historical account of Turkish-EU relationship to establish the foundations of the

discussions to be found in the later parts of the paper. Second, the paper formulates a computable general equilibrium model for the Turkish economy where both imperfect competition in the Turkish manufacturing sector and differentiated factors in the production process are considered. Third, counterfactual equilibrium analyses for a range of policy scenarios are performed. These scenarios are: customs union with the EU, full membership to the EU, full membership with replacement tax, and free trade. Section 5 is the calibration of the analysis and a brief discussion on the data. The results are presented in Section 6, which is followed by a Sensitivity Analysis in Section 7. We conclude the paper in Section 8.

2. THE POLITICAL ECONOMY OF TURKISH-EU RELATIONS

2.1. A Historical Overview

Turkey's relationship with Europe is a long history of diplomacy, international trade, and culture. This relationship started before the modern Turkish Republic was formed. The Sultans of the Ottoman Empire used diplomatic relations with Europe to help balance power. The geographical location of the Ottoman Empire was very important for other countries, because its territories were a link between the continents of Asia and Europe. The Silk Road was very important for the Russian economy; they had to pass through Ottoman territories in order to go to warm seas. The Ottoman Empire's efforts to maintain good relations with Europe required restrictions of Russian expansion in terms of using the Silk Road, which strained Ottoman-Russian relations, pitting them against each other.

Full integration with Europe has always been the main policy target of Turkey, which was formed after the collapse of its more powerful predecessor, the Ottoman Empire, in 1923. Nevertheless, Turkey failed to secure to be part of the most prestigious political initiative of Europe, namely the EU. Mindful of impotence to impose itself on other countries of the region, Turkey has based its foreign policy on four principles: (i) non-interference in the Middle East, (ii) acceptance of European security systems, (iii) non-interference in the disputes among other countries, and (iv) good relationship with other nations (Muftuler, 1997).

Turkish-Russian relations were further strained as a result of Soviet claims to part of Turkey during World War II. This accelerated Turkish desire to integrate with the West faster, which itself was looking ways to contain the Soviet Union's expansionary policies. NATO accepted Turkey as a member, given its geographic location bordering the Soviet Union and its close proximity to the Middle East. This crucial position was very important for NATO, not only for defense of the Eastern Mediterranean, but also to prevent the Soviet Union's plan of invading Iranian Azerbaijan.

Turkish-Western relations, especially between Turkey and the US, reversed during the late 1960s and early 1970s, partly due to Turkish reaction against an arms embargo imposed by the US and its allies. The deterioration in relations between the two sides was further fueled by

President Johnson's stand on the Cyprus issue, perceived as tilted to the Greek side. Disagreement over the Cyprus issue worsened Turkish-Greek relations and Turkish-EU relations because Greece successfully converted the issue into a Turkish-EU problem. This all played to the hands of those wishing to forge stronger ties between Turkey and the Soviet Union.

Turkey's newly adopted path moved further away from the West following a military coup d'état in 1980, which brought about much closer ties between Turkey and its neighboring states in the Middle East, especially Iran and Iraq. The relatively short-lived friendship between Turkey and its neighbors plummeted to an all time low, thanks to Turkey's position in the Gulf War in 1990. Turkey was seen as a strategic ally by both opposing sides: Iraq and the United Nations (UN) to counteract the opponent's policies. By closing Iraqi oil pipelines, which passed through Turkish territory before Iraqi oil was shipped to the international markets, Turkey effectively supported the NATO attack and economic sanctions against Iraq. This crucial decision, mainly made by then Turkish President Turgut Ozal, was based on a hope its losses due to lost revenues with Iraq would be compensated by the UN. This cost Turkey dearly when the UN failed in its promise. The losses were estimated at sixteen billion dollars in 1990, nine billion dollars in 1991, and twenty billion dollars in 1992 (Muftuler, 1997).

2.2. *The Association Agreement: "The Ankara Treaty"*

Turkey and the European Union, then called the European Economic Community (EC), set the tone for the future place of Turkey in Europe with the signing of a treaty, viz. the Ankara Treaty, in 1963. Unfortunately, both Turkey and the EC signed the agreement for political rather than economic reasons. From the Turkish point of view, it was an opportunity to open EC markets; for the EC, it was to maintain balance between Greece and Turkey. The Ankara agreement specified three main stages: i) the preparatory stage, ii) the transitional stage, and iii) the final stage. The preparatory stage was to last between five and eleven years. It was designed as a transition for the Turkish economy without putting any obligation on Turkey. During this period, the EC assisted Turkey to improve its economic development under the agreement conditions. To this end, Community members decreased custom duties for certain import commodities from Turkey. This process led to a significant increase of Turkish trade with the EC in 1968, with more than half of Turkish exports finding their way to the EC (Yalcintas, 1990).

The second stage was a transitional period to try to develop a customs union. It involved harmonization of policies and liberalization of labor and capital movements. This period was designed to last between twelve and twenty-two years. According to the treaty, this stage was the most important step because both sides had to prepare for full membership of Turkey, and adopt a Common External Tariff.

The third and final stage was designed to establish a full customs union between the EC and Turkey. This required Turkey to harmonize its tax structure and accept the Common Agricultural Policy (CAP). Moving from

one stage to another was not automatic, but depended upon completion of requirements and new negotiations.

According to the Ankara Treaty, the preparatory stage might have been completed as early as 1967. Due to disagreements and misunderstandings, it did not end by this date. In 1970, both sides signed another protocol to establish a customs union by the end of 1995. Under this protocol, Turkey had to reduce tariffs on European imports. For tariff reductions, EC and Turkish officials established two lists of goods for Turkish imports from the EC. The duty reductions for the first group of goods were to be implemented within 12 years, with the second group's duty reductions to be implemented in 22 years. In 1973 and 1976, Turkey reduced its duties on EC goods by 10% each year. However, Turkish officials rejected the third reduction, as they felt the EC was not fulfilling its obligations. After this rejection, the EC accepted free accession of Turkish industrial products to the European markets, excluding textile and petroleum goods. They also granted Turkey a zero tariff for 37% of its agricultural exports to the EC. However, a number of problems arose when the protocol went into practice. Among these problems was the "meaning" of agricultural policy harmonization. The Community interpreted this as trade liberalization, but Turkey interpreted it as joining the CAP (Muftuler, 1997). This issue was ambiguous regarding the validity of the agreement. Even though Turkish officials announced Turkey would apply for full membership in 1980, the military takeover on September 12, 1980 froze the full membership application process.

The military ceded power to civilians in 1983, paving the way for full membership application on April 14, 1987. Citing its ongoing internal integration, EC turned down Turkey's application. Also included in the long list of reasons for rejection was the necessity of political pluralism, improvement of human rights, and Turkey's dispute with Greece both on Cyprus and on Aegean Island (Muftuler, 1997).

Commonly held beliefs regarding rejection were not in agreement with the list presented by the EC. Turkey's territorial size was almost equivalent to that of the original Community of Nine, but Turkey was considerably poorer than any other Mediterranean country that had joined the Community previously (Barchard, 1985). The Turkish population, which would be the fifth largest in the Community and was expected to be the largest in the near future, was thought to be another basis for rejection. Cultural and religious differences were also considered to have played a role in the Community's final decision. To stop further erosion of relations, the European Commission adopted a policy package in 1990, proposing a customs union with Turkey by December 31, 1995. At the thirty-fourth Association Council meeting in 1993, Turkey and the EC came to an agreement on a cooperation package. This package involved the free circulation of goods, adaptation of CAP, application for the Common External Tariff, and cooperation in trade related services. Finally, on March 6, 1995, Turkey and the EC signed a customs union agreement in Brussels, which went into operation on January 1, 1996. With this major development, the second stage of the Ankara Treaty officially ended and the final stage had begun.

2.3. *Joining the Customs Union*

The customs union agreement was an attempt to strengthen ties since Turkey had 52% of its external trade with the EU, and more than 60% of foreign investments in Turkey came from EU countries. However, both economic and non-economic impediments still stood in the way of Turkey's full membership. A high inflation rate, increasing unemployment, a large government debt and large internal and external debt are major problems to be dealt with by Turkish officials. Human rights violations and freedom of speech can be cited among the main non-economic problems.

In addition to these problems, the customs union agreement placed a number of obligations on Turkey, which can be summarized as: (i) the Turkish parliament must adopt new laws on copyright issues, (ii) import and export duties must be removed completely, and (iii) the tax system should be revised, i.e., indirect taxes, such as sales tax, should be removed and direct taxation should be adopted (Muftuler, 1997). The success of the Turkish government in dealing with these mandates will determine the success of the customs union. Without harmonization of policies between Turkey and the EU, the customs union cannot succeed.

Turkish officials adopted a series of new laws in order to harmonize foreign trade with the EU in joining the customs union. Through this new legislation, Turkey adopted the EU's external trade policies. The new laws dramatically lowered the average protection level from 10.97% to 5.8%, while all custom duties imposed on industrial products from the EU and the European Free Trade Area (EFTA) were abolished. For agricultural goods, trade laws were modified according to GATT regulations. Tariff reductions on agricultural imports were scheduled for completion by the year 2001, and the adoption of copyrights and patent laws were accelerated according to Uruguay Round regulations. In addition to these economic changes, the customs union helped Turkish society to move towards greater democracy. Although some laws concerning human rights were modified, there are still many steps the Turkish democracy must take. Even though the customs union brought a new phase in EU-Turkish relations, whether this will lead to eventual full membership remains a question. For the future, there are three potential scenarios for EU-Turkey relations: (i) implementation of the agreement and eventual membership, (ii) limiting Turkey to preferential agreements with more concessions on trade issues subject to review, but without the guarantee of a fully developed relationship, and (iii) a two-tiered agreement in which Turkey can be accepted for a full membership for certain policy areas, but not others (Muftuler, 1997).

3. The Model: A Computable General Equilibrium Approach

In this section, we turn to the analytical framework of a computable general equilibrium model for the Turkish economy (TRCGE). The model explains the impact of Turkey's accession into the European Union under a

neo-classical framework. Following the general rules of CGE modeling, production, foreign trade, income and expenditure relations are explained first, and then calibration and simulation strategies are analyzed. The mathematical formulation of the model is included in the appendix.

The model used in this article is an extension of Yeldan (1997) and Kose (1996). The TRCGE model consists of three different sectors and a differentiated rest of the world (ROW) account. The model has two important specifications. First, it considers imperfect competition in the Turkish manufacturing sector. With this specification, we can differentiate the commodity market into perfect and imperfect competition, and highlight policy implications in terms of these two criteria. Since the main objective of this study is to cover all impacts of membership, the ROW account is differentiated into two sub-accounts: EU countries and non-EU countries.

The second important specification considers differentiated factors in the production process. Labor is differentiated as "formal/organized labor" and "marginal/informal labor". With this specification we can analyze the basic characteristics of two different labor markets, and show linkages between them. The paper defines a distortion parameter as the ratio of wage rates in each sector to average wages in the economy, and calculates this as a parameter in the model. The model relaxes the traditional assumption of the neoclassical framework in terms of equal wage rates in all sectors, and considers wage rigidity in these markets. The labor force in the formal market is so qualified that they do not work for below a certain wage rate.

The decision processes of the model are differentiated as public and private sectors. The Armington assumption and small country perspectives are recognized throughout the model. Import demand for each sector is determined in two stages. In the first stage, domestic production and sectoral import demands are solved in terms of relative prices and exchange rates. In the second stage, the import demand found in the first stage is differentiated into two origins: EU and non-EU imports. This differentiation in imports in terms of origin makes the analysis of Turkish accession into the EU much easier. Because Turkey has to remove all import duties levied on EU commodities and not on non-EU commodities, the custom taxes collected from EU countries and non-EU countries will be put into different categories in order to capture the impacts of the accession to the EU.

The intermediate input demand function is considered as a Leontieff structure, and the production technology is assumed to have multi-level constant elasticity of substitution (MLCES). There are several advantages in working with this function. The main advantage of the CES function is that the elasticity of substitution is constant, but not equal to unity. This condition is a desirable one, because the restriction of unit elasticity of substitution is relaxed, making the function more flexible to work with.

4. Policy Scenarios

1) *Customs Union with the EU*: This scenario considers the obligations that Turkey and the EU have made, and assumes both sides fulfill their

obligations. These obligations are determined by the European Council and Common External Tariff rules.

2) *Full Membership to the EU*: This scenario considers Turkey's full accession into the EU. According to the agreement between Turkey and the EU, Turkey will lower tariff rates for EU imports, but continue to impose higher tariff rates for non-EU countries. This reduction in tariff rates causes the Turkish government to lose tariff revenues coming from the EU. However, the EU will compensate the Turkish government for a portion of these losses.

3) *Full Membership plus Replacement Tax*: This scenario analyzes the impacts of full membership with the assumption of an increase in the domestic indirect tax rate. Under this scenario, government losses due to tariff reduction are compensated with an indirect tax rate increase.

4) *Free Trade*: This scenario analyzes the option of free trade. Under this scenario, Turkey will reduce tariff rates for all countries. This reduction in tariff rates does not necessarily mean that tariff rates for all countries should be zero. Tariff rates on average should be asymptotically zero. The reductions are made not only in the tariff rates but also non-tariff barriers such as funds, which should be eliminated completely under this scenario.

Under the customs union scenario, import tariff rates on EU manufacturing goods are reduced completely, and no change is made on the agricultural and services sectors. However, import tariffs on non-EU goods are reduced by 25% in the agricultural sector and 40% in both manufacturing and services sectors. The full membership scenario requires complete elimination of tariffs on EU goods for all sectors. However, only 50% of tariffs will be reduced on non-EU goods. As can be expected, all tariffs are removed under the free trade scenario.

5. Calibration and Data

The model has been calibrated using the social accounting matrix prepared by de Santis (1995), representing the benchmark equilibrium of the model. When calibrating the scale and share parameters we make use of Rutherford's (1999) method implemented with GAMS/MINOS5 non-linear solver package. The model starts with the balanced equilibrium for the social accounting matrix as the reference equilibrium, with a set of elasticities taken from available empirical studies such as Harrison et. al., (1993, 1996) and de Santis (1997).

Since data used for the base year does not include quantities, only monetary data are used in the process. For that reason the most common method used is to assume all prices are equal to one. In other words, physical quantities in the base solution are obtained by assuming the price level for each category is equal to unity. After determining the functional forms to be used in the model, the calibration process begins. Although there are different techniques to determine parameter values, the calibration method is the most appropriate technique, because it is much simpler and does not require econometric knowledge.

In the first step of the calibration the matrix collects the quantities appearing in the equations. This is the first reference point in the isoquant of the calibrated. In the second step, relative prices in that year fix the slope of the isoquant in that point. The elasticities showing the curvature of the isoquant are used in the last step of the calibration.

6. Results and Discussion

From the beginning of the 1990s, the Turkish economy continuously suffered from macroeconomic problems. One of the main reasons for these problems was the government sector deficit, which was increasing every year. The ratio of government deficit to GDP was 3.5% in 1987. However, this ratio increased to 5.3% in 1991 and 6.7% in 1994, and continued to increase in the following years. During these years, the Turkish economy experienced a decrease in government revenue and import duties became a major component of government revenue. In 1990, for example, 15% of total budget revenue was from these taxes. Although this rate continued to decrease in the following years, it is still high compared to European countries. After the customs union, this ratio dramatically decreased due to the Common External Tariff of the EU, and the Turkish economy experienced problems financing government expenditures (Kose, 1996).

In this section of the paper, the comparison of the scenarios is discussed. Macroeconomic indicators of an economy under different scenarios should be compared to see the impacts of the various policies. The impact of the customs union and full EU membership on the Turkish economy with different policy assumptions is presented in Table 1 and Table 2. The Turkish economy experiences a 2% decrease in GDP under the customs union scenario. This decrease becomes nearly 2.7% under the full access scenario, and 3.4% under the free trade scenario. However, the loss in GDP will almost disappear in the replacement tax scenario. Government revenue also decreases under all scenarios. The reason for this decrease is the elimination of tariffs and tariff-related taxes on imports. The losses in import taxes by origin are shown in Table 2. Under the customs union scenario, almost 99% of tariff revenues from the EU and 63% of fund revenue from the EU will be lost. Also, 25% of tariff revenues from the ROW and 61% of the fund revenues from the ROW will be lost. As explained earlier, however, tariff and fund rates on EU imports will be completely eliminated under the other scenarios, and 40% of tariff revenue, and 63% of fund revenue from the ROW will be lost under the second and third scenarios. All revenues due to tariff and fund, of course, will be lost under the free trade scenario. Public consumption also decreases under all scenarios. This decrease is dramatic under the free trade scenario (34%). Government savings also decrease under all scenario assumptions between 2.7% and 3.4% of the base year value.

Table 1: Economic Indicators of the Turkish Economy Under Different Policy Scenarios

	Base Year Values (Billion TL)	Policy Scenarios (% Change)*			
		Customs Union	Full Membership	Full Membership + Tax	Free Trade
GDP	390,796.6	-2.1	-2.7	-2.8	-3.4
Public Consumption	43,127.6	-20.7	-26.4	-16.5	-33.5
Private Consumption	262,140.5	1.6	1.9	-1.2	2.5
Public Savings	13,692.7	-2.1	-2.7	-2.8	-3.4
Private Savings	76,141.1	0.5	0.5	-9.2	0.7
Public Investment	34,228.8	0.0	0.0	0.0	0.0
Private Investment	68,458.6	2.3	2.7	1.0	3.6
Exports to the EU	24,706.6	11.0	13.7	3.6	15.2
Exports to the ROW	27,457.4	2.2	3.5	-4.2	5.6
Imports from the EU	34,392.8	5.9	14.6	1.8	9.4
Imports from the ROW	48,095.3	2.2	-1.5	-4.1	4.0
Exchange Rate (TL/\$)	2630.0	11.6	14.4	13.0	18.7

* Please refer to the Section 4 for detailed explanation of the Policy Scenarios

Table 2: Government Income and Expense Balance Under Different Policy Scenarios

	Base Year Values (Billion TL)	Policy Scenarios (% Change)*			
		Customs Union	Full Membership	Full Membership + Tax	Free Trade
Incomes:					
Indirect taxes	20,525.805	-0.85	-1.03	22.80	-1.44
Corporate taxes	5,093.022	0.55	0.57	-1.14	0.80
Income taxes	26,486.100	0.50	0.54	-0.82	0.71
Tariff income:					
From EU	582.002	-99.11	-	-	-
From ROW	515.501	-24.97	-40.08	-40.53	-
Funds:					
From EU	5,673.611	-62.24	-	-	-
From ROW	6,630.828	-60.66	-62.22	-62.44	-
Factor incomes	13,462.894	-2.04	-2.69	-2.76	-3.40
Expenses:					
Consumption	43,127.656	-20.64	-26.46	-14.37	-33.55
Transfers	16,980.748	0.00	0.00	0.00	0.00
Interest payments	9,023.531	11.99	13.91	13.59	19.04
Savings	13,692.731	-2.04	-2.68	-2.75	-3.39
Investment	34,228.780	0.00	0.00	0.00	0.00

* Please refer to the Section 4 for detailed explanation of the Policy Scenarios

Private income increases 0.5% under a customs union, 1.5% under full membership, and 0.7% under free trade. However, it decreases by 0.8% of

the base value under the third scenario in which a replacement tax is levied. Private consumption also increases in the range of 1.6 % to 2.6% of its base value under the customs union, full membership, and free trade scenarios. It decreases by 1.2% of the base value under the replacement tax. Private savings increase under the all scenarios except the replacement tax. The increase is 0.5% under customs union and full membership scenarios, and 0.7% under free trade. Under a replacement tax, however, it decreases 9.2%.

The comparison of revenue, consumption, savings, and investment changes in government and private sectors indicates that the economic crisis in the Turkish economy is the result of the unbalanced structure of the government sector. For this reason, cutting public expenditures is a good policy to eliminate the negative impact of the public sector on the economy.

Turkey's accession into the EU will have a trade creating impact between the EU and Turkey under all scenarios. Despite a slight increase in the wage rate, elimination of tariff and tariff-related taxes will decrease the domestic price level. The lower price level and changes in the exchange rate in favor of the EU cause an increase in exports between the EU and Turkey.

With a reciprocal decrease in tariff rates, Turkish imports from the EU will increase as seen from Table 1. Turkish exports to the EU increase by 11% under a customs union, 13.7% under full membership, 15.2% under free trade, and 3.6% under a replacement tax. Turkish imports from the EU increase by 5.9% under a customs union, 14.7% under full membership, 9.5% under free trade, and 1.8% under the replacement tax.

Exports to the ROW increase due to reciprocal elimination of tariffs and changes in the exchange rate in favor of the ROW. According to Common External Tariff, Turkey is required to decrease import taxes on the third countries as well. This results in an increase in trade volume between Turkey and the ROW. Exports to the ROW increased by 2.2% under a customs union, 3.5% under full membership and 5.6% under free trade. However, ROW exports decreased by 4.2% of the base value under a replacement tax. Imports from the ROW increased by 2.3% under a customs union, and 4% under free trade. There will be trade diversion under the full membership and replacement tax scenarios, with Turkish imports from the ROW decreased by 1.4% under full membership, and 4.1% under a replacement tax.

Table 2 shows the changes in government balance under the proposed policy scenarios. Total indirect tax collected is 20,525 billion TL in the base year. There are no significant changes in indirect taxes under the customs union, full membership or free trade scenarios. However, a 22.8% increase will be experienced under a replacement tax. This shows that indirect taxes should be increased by 22.8% to compensate for the losses due to tariff reduction. This can be called a "compensation tax rate". Changes in corporate and income taxes are too small to be considered. Government factor income will show a decrease by 3% of the base value, and experience almost equal changes under all policy scenarios.

Government interest payments are a major problem for Turkey as almost 10% of total government revenue went to interest payments in 1990 and this

rate is increasing every year. This is a real burden for an already in-debt Turkish budget. Increases in interest payments will be 12% under the customs union scenario, 14% under the full membership scenario, 13% under the replacement tax scenario, and 19% under the free trade scenario. Government debt should be reduced to cut down interest payments.

7. Sensitivity Analysis

A sensitivity analysis was performed for this model. All elasticities in the base year are assigned a priori to values, which indicate the best estimates. Since elasticity estimates include a margin of error, the remedy for this problem is to perform a sensitivity analysis. The elasticity values are obtained from Kose (1996), de Santis (1995) and Harrison et. al. (1996), and adjusted according to sectoral aggregation of this study.

The results obtained are not fragile to the assumptions made regarding elasticities, and variations are in an acceptable range. For example, GDP variations are in the range of -1% and 2.8%, government revenue variations are in the range of -2.3% and 1.9%, and replacement tax rate variations are in the range of -2.4% to 3.2%. The highest variations are seen in domestic sales and EU imports. However, these are not large variations considering the scope of the study and the number of sectors involved.

8. Conclusions

In this paper, we analyze the effects of Turkey's accession into the European Union on the main economic indicators of the Turkish economy with a CGE model under various scenarios. By the very nature of the CGE models, base values are reproduced by the calibration process. These analogous results assure the validity of calibration procedure and SAM constructed. Thus, instead of giving full magnitudes of the results, only percentage changes in each variable are given so that policy makers have much clearer vision about the policies adopted.

Based on our simulation results, under the customs union scenario, a 2% decrease in GDP and a 8% decrease in government revenue will be experienced. As a result of this revenue loss, government consumption also decreases by 20%. However, private income, consumption, and savings increase. This result seems to lead policy-makers of Turkey in a direction allowing them to follow the best policy. In reality, it is very hard to rely on such strong conclusions, as there is no "best" policy with political decisions. There are "better" policies, however, in certain cases, and these "better" policies may change depending on the perspective of policy-makers, current conditions of the country, and the power of lobbyists in each sector. Thus, knowing this is a political process rather than completely economic, appropriate cautions should be taken to utilize the results of this study.

REFERENCES

- Bekmez, S. (2002), "Sectoral Impacts of Turkish Accession to the European Union: A General Equilibrium Analysis" *Eastern European Economics*, vol 40, no 2.
- Ciller, T. (1990) "Public Budget Deficits and External and Internal Debt: A Comment," in *Institutional Aspects of Economic Integration of Turkey into the European Community*, Korner, E. and Shams, R. (eds.), Verlag Weltarchiv GmbH: Hamburg, Germany
- de Santis, R. A. (1997), "The Impacts of a Customs Union with the EU on Turkey's Welfare, Employment and Income Distribution: An AGE Model with Alternative Labor Market Structures" Kiel Working Paper 843, Kiel Institute of World Economics, Kiel, Germany.
- _____ and Ozhan, H. G. (1995) "A Social Accounting Matrix for Turkey 1990." *Inforum Working Papers*, Department of Economics of University of Maryland at CollegePark, no.1.
- Diao, X., Roe, T. L., and Yeldan, A. E. (1998) "How Fiscal (Mis-)Management May Impede Trade Reform: Lessons from an Intertemporal, Multi-Sector General Equilibrium Model for Turkey." *Economic Development Center, University of Minnesota, Department of Economic, and Applied Economics, Minneapolis*. January: 1-30.
- Harrison, G. H., Rutherford, T. F., and Tarr, D. G. (1996) "Economic Implications for Turkey of a Customs Union with the European Union." *World Bank Policy Research Working Papers*, n.1599.
- _____, Rutherford, T. F., and Tarr, D. G. (1993) "Trade Reform in the Partially Liberalized Economy of Turkey." *The World Bank Review* 7(2): 191-217.
- _____, Rutherford, T. F., and Tarr, D. G. (1992) "Piecemeal Trade Reform in Partially Liberalized Economies: An Evaluation for Turkey" *World Bank Working Papers*, no:951.
- Kose, A. H. (1996), "Gumruk Birliğinin Türkiye Ekonomisi Üzerine Etkileri: Bir Hesaplanabilir Genel Denge Modeli Çalışması" Unpublished Ph.D. Dissertation, Ankara University, Sosyal Bilimler Enstitüsü, Ankara, Temmuz.
- Krauss, M. and Johnson, H. G. (1974), *General Equilibrium Analysis: A Micro-economic Text*. George Allen and Unwin Ltd. Press: London.
- Mercenier, J. and Yeldan, E. (1997) "On Turkey's Trade Policy: Is a Customs Union with Europe Enough?" *European Economic Review* 41: 871-880.
- Muftuler, M. (1997) *Turkey's Relations with a Changing Europe*. Manchester University Press: Manchester.
- Peers, S. (1996), "Living in Sin: Legal Integration Under the EC-Turkey Customs Union." *European Journal of International Law* 7(2): 411-330.
- Rutherford, T. F. (1999), "Applied General Equilibrium Modeling with MPSGE as a GAMS Subsystem: An Overview of the Modeling Framework and Syntax" *Computable Economics*, 14: 1-46.

- Sadoulet, E. and de Janvry, A. (1995), *Quantitative Development Policy Analysis*. Johns Hopkins University Press: London.
- Togan, S. (1994), *Foreign Trade Regime and Trade Liberalization in Turkey During the 1980s*. Ashgate Press: England.
- Tovias, A. (1993), "Integrating Turkey into the European Community: A Stabilizing Factor for the Middle East." *Futures* 25(9), November: 949-962.
- Yalcintas, N. (1990), "Turkey and the European Community" in *Institutional Aspects of Economic Integration of Turkey into the European Community*, Korner, E. and Shams, R. (eds.), Hamburg.
- Yeldan, A. E. (1998), "On Structural Sources of the 1994 Turkish Crisis: A CGE Modeling Analysis" *International Review of Applied Economics* 12:379-414.
- _____. (1997) "Financial Liberalization and Fiscal Repression on Turkey: Policy Analysis in a CGE Model with Financial Markets." *Journal of Policy Modeling* 19(1): 79-117.

APPENDIX MATHEMATICAL FORMULATION OF THE MODEL

Production Technology and Factor Markets

Production technology is assumed to have multi-level constant elasticity of substitution (MLCES). This technology can be expressed as:

$$Q_i = A_i \left[\mathbf{a}_i V_i^{-b} + (1 - \mathbf{a}) N_i^{-b} \right]^{1/b} \quad (1)$$

where A_i represents the scale parameter showing the returns to scale, V_i represents value added factors (capital and labor), N_i represents composite intermediate commodities, \mathbf{a}_i represents the distribution parameter, \mathbf{b}_i represents the substitution parameter, and $\mathbf{x}_i = 1/(1 + \mathbf{b}_i)$ represents elasticity of substitution between factors and intermediates.

The value added factors in the equation can be expressed as:

$$V_i = AV_i \left[\sum_s \mathbf{d}_{i,s} L_{i,s}^{-r_i} + \left(1 - \sum_s \mathbf{d}_{i,s} \right) K_i^{-r_i} \right]^{-1/r_i} \quad (2)$$

where AV_i represents the scale parameter, $L_{i,s}$ represents labor categories, K_i represents capital, $\mathbf{d}_{i,s}$ represents the share parameter, and $\mathbf{j}_i = 1/(1 + r_i)$ represents the elasticity of substitution between primal production factors (capital and labor).

The intermediate input demand is defined as Leontieff technology:

$$N_i = \sum_j a_{ij} Q_j \quad (3)$$

where a_{ij} is a constant, and cannot be changed in short term.

If the prices and technological constraints are given, the choices of producers can be mathematically expressed as:

$$\text{Min} PQ_i Q_i (1 - tax) = PVA_i V_i + PN_i N_i \quad (4)$$

subject to

$$V_i = AV_i \left[\sum_s \mathbf{d}_{i,s} L_{i,s}^{-r_i} + \left(1 - \sum_s \mathbf{d}_{i,s} \right) K_i^{-r_i} \right]^{-1/r_i} \quad (5)$$

where PQ_i represents price of good i , PVA_i represents the price of primary inputs, and PN_i represents price of intermediate inputs. The first order condition:

$$\frac{V_i}{N_i} = \left(\frac{PN_i}{PVA_i} \frac{\mathbf{q}_i}{1 - \mathbf{q}_i} \right)^{x_i} \quad (6)$$

The composite price of intermediate inputs can be calculated using a weighted average price of all intermediate commodities.

$$PVA_i = [PQ_i QS_i (1 - tax) - PN_i N_i] / V_i \quad (7)$$

$$PN_i = \sum_j a_{ij} PC_j N_i \quad (8)$$

where PC_i represents price of the composite good.

The following equation implies this basic assumption of the profit maximization criteria:

$$Max \mathbf{p}_i = PVA_i V_i - \sum_s W_s L_s \quad (9)$$

where W_s represents wage rates in the two labor categories. The first order condition:

$$\frac{L_{i,s}}{V_i} = \left(\frac{\mathbf{d}_{i,s}}{AV_i^{r_i}} \frac{PVA_i}{W_k} \mathbf{I}_{i,s} \right)^{j_i} \quad (10)$$

where $\mathbf{I}_{i,s}$ represents wage differences between sectors for the same kind of labor force, and shows the distortions in the labor markets. This distortion can be defined as ratio of wage rate in each sector and average wage in the economy, and calculated as a parameter in the model.

Wage and employment rate in the formal labor market:

$$W_f = \underline{W}_f \quad (11)$$

$$\underline{L}_{S_f} = LD_f + Unemp \quad (12)$$

Wage and employment rate in the marginal labor market:

$$\mathbf{I}_{i,M} W_M = PVA_i (\partial V_i / \partial LD_M) \quad (13)$$

$$LD_M = LS_M + Unemp \quad (14)$$

where LD represents labor demand and LS represents labor supply.

The balance in the labor market is:

$$LS_f + LS_M = LD_f + LD_M \quad (15)$$

The rate of return for capital in each sector can be easily calculated within this framework as:

$$P_i = PVA_i QS_i - \sum_i L_{i,s} \mathbf{I}_{i,s} W_s \quad (16)$$

where P_i represents sectoral returns of capital. Within this framework the prices in the monopolistic sectors can be formed in this way:

$$PQ_i = (1 + m) AVC_i \quad (17)$$

$$TVC_i = \left(\sum W_s \mathbf{I}_{ik} L_{i,s} \right) + PN_i N_i \quad (18)$$

$$AVC_i = TVC_i / QS_i (1 - tax_i) \quad (19)$$

where AVC and TVC represent average and total variable costs, respectively, and m represents a constant that implies higher prices. This constant m implies that monopolistic sectors do not produce under their full capacity and transmit higher costs directly to consumers if the demand curve is sufficiently inelastic. This higher price alters the income distribution and encourages the "rent economics" against labor (Kose, 1996).

Value added produced in the monopolistic sector (V_i) is assumed as a function of "capacity used ratio" (U_i). The capacity can be interpreted as the relationship between the changes in the market demands and value added produced in the market. This relationship can be expressed as:

$$V_i = U_i \cdot f(K, L_F, L_M) \quad (20)$$

where U_i = Capacity used / Full capacity.

Foreign Trade and Balance of Payments

The model assumes five different commodities: (i) domestic, (ii) exported to the EU (iii) exported to the ROW, (iv) imported from the EU, and (v) imported from ROW.

According to the specifications above, the domestic sectoral commodities (DC_i) and composite import commodities (M_i) together produce a composite commodity such that:

$$CC_i = C_i \left[\mathbf{f}_i M_i^{-\mathbf{f}_i} + (1 - \mathbf{f}_i) DC_i^{-\mathbf{f}_i} \right]^{1/\mathbf{f}_i} \quad (21)$$

where CC_i , M_i and DC_i represent composite commodity, imported commodity, and domestically produced commodity, respectively; C_i represents the shift parameter; \mathbf{f}_i represents the share parameter; and $1/(1+\mathbf{f}_i) = \mathbf{s}_i$ represents the elasticity of substitution between domestic and imported goods.

The problem in this process for consumers is to minimize the cost of commodities consumed. This problem can be expressed as:

$$\text{Min} PC_i CC_i = PD_i DC_i + PM_i M_i \quad (22)$$

subject to:

$$CC_i = C_i \left[\mathbf{f}_i M_i^{-\mathbf{f}_i} + (1 - \mathbf{f}_i) DC_i^{-\mathbf{f}_i} \right]^{1/\mathbf{f}_i} \quad (23)$$

In this optimization problem, import and domestic commodity demands can be found by solutions of the first order conditions. That is:

$$\frac{M_i}{DC_i} = \left(\frac{PD_i}{PM_i} \frac{\mathbf{f}_i}{1 - \mathbf{f}_i} \right)^{\mathbf{s}_i} \quad (24)$$

The imported goods from different origins are assumed to be limited substitutes for each other and are expressed as an Armington function:

$$M_i = \Omega_i \left[\mathbf{g}_i MEU_i^{-\mathbf{t}_i} + (1 - \mathbf{g}_i) MRW_i^{-\mathbf{t}_i} \right]^{1/\mathbf{t}_i} \quad (25)$$

where MEU and MRW represent imports from the EU and imports from ROW, respectively; \mathbf{g}_i and Ω_i represent the share and the shift

parameters, respectively; and $V_i = U_i \cdot f(K, L_F, L_M)$ represents the elasticity of substitution between imported goods from different origins.

Given different originated imported good prices and the degree of elasticity of substitution, the optimization problem of the consumers becomes:

$$\text{Min} PM_i M_i = PMEU_i MEU_i + PMRW_i MRW_i \quad (26)$$

subject to:

$$M_i = \Omega_i \left[\mathbf{g}_i MEU_i^{-\mathbf{t}_i} + (1 - \mathbf{g}_i) MRW_i^{-\mathbf{t}_i} \right]^{1/\mathbf{t}_i} \quad (27)$$

The first order condition for this problem becomes:

$$\frac{MEU_i}{MRW_i} = \left(\frac{PMRW_i}{PMEU_i} \frac{\mathbf{g}_i}{1 - \mathbf{g}_i} \right)^{\mathbf{e}_i} \quad (28)$$

where $PMRW$, and $PMEU$ represents the price of rest of the world and price of the EU, respectively.

In the import side of the model, small country assumptions and infinitely elastic EU and non-EU import supply assumptions are made. If the exchange rate (ER) and foreign trade taxes are known, the domestic market price of the commodities can be determined as:

$$PMEU_i = PW_{MEU_i} (1 + tmeu_i + tfeu_i) ER \quad (29)$$

$$PMRW_i = PW_{MRW_i} (1 + tmrw_i + tfrw_i) ER \quad (30)$$

where $PMEU$, $PMRW$ and PW indicate domestic price of EU imports and domestic price of ROW imports, and the world price, respectively; $tmeu$, $tfeu$ and $tmrw$, $tfrw$ represent the EU and non-EU custom taxes and funds, respectively. The export supply equation is expressed as:

$$QS_i = D_i \left[\mathbf{m} E_i^{-\mathbf{n}_i} + (1 + \mathbf{m}) DC_i^{-\mathbf{n}_i} \right]^{1/\mathbf{n}_i} \quad (31)$$

where D_i represents the shift parameter, and \mathbf{m}_i represents the share parameter.

The maximization problem becomes:

$$\text{Max} PQ_i \cdot QS_i = PD_i DC_i + PE_i \cdot E_i \quad (32)$$

subject to:

$$QS_i = D_i \left[m E_i^{-n_i} + (1 + m) DC_i^{-n_i} \right]^{-1/n_i} \quad (33)$$

where D_i represents the shift parameter, E_i represents commodity exported, m represents the share parameter, and $V_i = 1/(1 + n_i)$ represents the transformation elasticity.

The optimal market combinations between domestic and exported commodities can be found by solving the first order condition:

$$\frac{E_i}{DC_i} = \left(\frac{PE_i}{PDC_i} \frac{1 - m}{m} \right)^{V_i} \quad (34)$$

The next step of the model is to identify the exported commodities in terms of their origins. The sectoral exports (E_i) are sent to the EU and the ROW. Exports to the different origins are assumed to be limited substitutes for each other and expressed as an Armington function:

$$E_i = Y_i \left[a_i EEU_i^{-h_i} + (1 + a_i) ERW_i^{-h_i} \right]^{1/h_i} \quad (35)$$

where EEU and ERW represent exports to the EU and exports to the ROW, respectively; a_i represents the share parameter; Y_i represents the shift parameter, and $w_i = 1/(1 + h_i)$ represents the elasticity of substitution between exported goods of different origins.

The price relationship in the model can be expressed as:

$$PE_i = \underline{PWE}_i \cdot ER \quad (36)$$

where PE , \underline{PWE} and ER represent domestic price of exported goods, world price of exported goods, and exchange rate, respectively.

Domestic average prices can be calculated as the weighted average of domestic and exported commodity prices:

$$PQ_i = (PD_i DC_i + PE_i E_i) / QS_i \quad (37)$$

The foreign trade equations of the model are explained above. The balance of payments equations must be explained in order to complete the model.

Flexible exchange rates are assumed rather than fixed exchange rates. The balance of payments can be shown in the following way:

$$(\underline{PM}_w M) + \underline{PT}_{ROW} + \underline{GT}_{ROW} = (\underline{PE}_w E + \underline{REMIT} + \underline{PF}_{ROW} + \underline{GF}_{ROW} + \underline{FSAV}) \quad (38)$$

where \underline{PM}_w and \underline{PE}_w represent world price of imports and exports, respectively; \underline{PT}_{ROW} and \underline{GT}_{ROW} represent private and government income transfers to the ROW, respectively; \underline{PF}_{ROW} and \underline{GF}_{ROW} represent private and government factor incomes from ROW respectively; \underline{REMIT} represents private capital income (investment, interest incomes, etc.); and \underline{FSAV} represents foreign savings in Turkey.

Income and Demand Equations

The private sector value added can be obtained by subtracting government factor income and corporate tax.

$$YH = [(PVA \cdot V) - FI_G - TAX_{CAP}] + T + (FI_P - \underline{PT}_{ROW}) \cdot ER \quad (39)$$

where FI_G , and FI_P represents factor income of government and private sector, respectively; TAX_{CAP} represents corporate tax; T represents transfers to the private sector; and \underline{PT}_{ROW} represents private income transfers to the ROW. FI_G and TAX_{CAP} are determined as follows:

$$FI_G = rfg \cdot GDP \quad (40)$$

$$TAX_{CAP} = ctx \Sigma_i RP_i \quad (41)$$

where rfg represents a fixed proportion, ctx represents corporate tax rate in the current economy, and RP represents sectoral profits.

Household savings, consumption and tax are determined as:

$$TAX_{HH} = tax_h \cdot YH \quad (42)$$

$$SAV_{HH} = s_h [YH (1 - tax_h)] \quad (43)$$

$$CON_{HH} = (1 - s_h) [YH (1 - tax_h)] \quad (44)$$

where TAX_{HH} , SAV_{HH} , and CON_{HH} represent income tax, household savings, and household consumption, respectively; tax_h represents income tax rate; and s_h represents the marginal saving rate of the households. Another thing considered in the model is the question of how much of the total domestic production is consumed by the private sector. This question can be answered by using a classical linear expenditure system equation:

$$PC_i \cdot CD_i = cles_i \cdot CON_{HH} \quad (45)$$

where CD_i represents sectoral distribution of private total consumption, and $cles_i$ represents a distribution parameter.

Another participant in the model is the public sector. The following equation shows that the public income consists of tariffs, indirect taxes, direct taxes, corporation tax, factor income of the government, and government's foreign factor incomes:

$$GREV = TARIFF + TAX_{IND} + TAX_{HH} + TAX_{CAP} + FI_G + \underline{GFI}_{ROW} \cdot ER \quad (46)$$

where $GREV$ represents government revenue, TAX_{IND} , TAX_{HH} , and TAX_{CAP} represent indirect tax, income tax, and corporation tax, respectively; and GFI_{ROW} represents government's factor income from the rest of the world.

Since the rest of the world is differentiated as EU and non-EU countries, the tariff incomes to the Turkish economy can be expressed as:

$$TTR = CT_{EU} + CT_{ROW} + FUN_{EU} + FUN_{ROW} \quad (47)$$

where TTR , CT , and FUN represent total tariff revenue, total customs tax collected, and funds collected, respectively. The subscripts show the origin of tariff revenue.

The gross domestic production (GDP) and government expenditure (GEXP) equations can be written as:

$$GDP = (\sum_i PVA_i V_i) + TAX_{IND} + TTR \quad (48)$$

$$GEXP = \underline{INV}_G + CON_G + \underline{T} + \underline{GT}_{ROW} \cdot ER \quad (49)$$

where INV_G and CON_G represent government investment and government consumption.

In addition to these equations, government savings (GSAV) and government consumption sectoral distribution can be specified as:

$$GSAV = J \text{ GDP} \quad (50)$$

$$PC_i \cdot GD_i = gles_i \text{ CON}_G \quad (51)$$

where $gles_i$ represents a sectoral share parameter, and $\sum gles_i = 1$.

Investments in the economy are in one of two different categories: (i) changes in stocks, and (ii) physical capital investments.

Total investment is converted into the investment by sector of origin by using the capital composition matrix. This relationship can be explained as:

$$SI_i = \sum b_{ij} TPI_j \quad (52)$$

where SI represents sectoral investment, TPI represents total private investment in each sector, and b_{ij} is a constant coming from the capital composition matrix and represents investments from sector i to sector j .

The balance requirement in the goods market assumes further that demand and supply of composite commodity (CC) in each sector must be in equilibrium:

$$CC = INT + CD + GD + ID + (DST^p + DST^g) \quad (53)$$

where INT , CD , GD and ID represent intermediate demand, private consumption demand, government consumption demand, and investment demand, respectively. DST^p and DST^g represent private inventory investment and government inventory investment, respectively.

The TRCGE model includes three macroeconomic balances: the government deficit, savings-investment balance of the private sector, and the trade balance. These balances are not independent of one another (Kose, 1996). Considering this, investment, and savings can be expressed as:

$$INVEST = INV_p + INV_G \quad (54)$$

$$SAVING = SAV_{HH} + GSAV + \underline{FSAV} \cdot ER \quad (55)$$

where $FSAV$ represents foreign savings.

Contact Information

Selahattin Bekmez
University of Idaho
Dept. of Agricultural Economics and Rural Sociology
P.O. Box 442334
Moscow, ID 83844-2334
(208) 885-6875
Fax: (208) 885-5759
E-mail: sbekmez@yahoo.com

Ismail H. Genc
Assistant Professor of Economics and Adjunct Professor of Statistics
College of Business and Economics
University of Idaho
Moscow, ID 83844-3178
Phone: (208) 885-7147
Fax: (208) 885-8939
E-mail: igenc@uidaho.edu