

# REVIEW OF ECONOMIC AND BUSINESS STUDIES



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ISSN 1843-763X



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EDITORIAL

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## **GRADUATE LABOUR MARKET MISMATCHES: NEW FEATURES OF AN OLDER MATTER**

Mihai KORKA\*

***Abstract:** In the knowledge society progress depends on innovation, on the knowledge acquired through education, on the science put in practice with the purpose of improving the natural, economic, technical and social condition of human life. Universities are in that favoured position of keeping and creating science, of training through and for science. But, universities face today a series of challenges originated in their relation with the state, with the actors from the national and international extra-university environment, in particular with those active in the labour market. The article explores a variety of education mismatches in the graduate labour market: from over-education to skill mismatches and their impact on the employability. It also focuses on the expected improvement of quality management and of the shared responsibilities for the employability of graduates in the interaction between universities and employers.*

### **ROLE OF HIGHER EDUCATION IN THE ECONOMIC AND SOCIETAL DEVELOPMENT**

Shared concerns of governments in the European Union for economic recovery, enhanced competitiveness and income convergence bring higher education and employability of graduates in the spotlight.

For Romania, “While education is not the only policy lever available to policy makers interested in accelerating convergence, there are persuasive reasons that education should not be ignored. First, fiscal spending on education constitutes

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the third largest functional spending category on the budget (after spending on transportation, public works and housing and national defense) making it one of the most potent levers available to policy makers. Second, demographic forces will continue to shrink Romania's workforce, placing the onus on policy makers to ensure that the remaining workers are better prepared to make up for the shortfall in numbers. Third, as Romania continues to integrate its economy with the rest of EU, the demand for more and better educated workers is likely to rise."<sup>1</sup>

Universities have an important role to play in the present and future economic and societal development, in a context in which the concept of higher education itself is going through a deep reconsideration of the modalities of responding to the expectations of the extra-university world, as well as of the means of dealing effectively with the challenges of the future and with the potential opportunities.<sup>2</sup> Both on the short and long term humankind will depend to a great extent on the high qualified professional competences and on the knowledge and aptitudes acquired through research and innovation. It is becoming increasingly obvious that in the knowledge society progress depends on the original scientific creation, on the advanced knowledge acquired through tertiary education, on the science put in practice with the purpose of improving the natural, economic, technical and social condition of human life.

Universities are in that favoured position of keeping and creating science, of training through and for science. But, universities face today a series of challenges originated in their relation with the state, with the other actors from the national and international extra-university environment, in particular with those active in the labour market.

### **MISMATCHES IN THE UNIVERSITY – LABOUR MARKET INTERACTION**

In a complex economic, social and cultural environment, complemented by post-crisis turbulences in the labour market, universities have to project and implement appropriate responses to these challenges from an academic, managerial, financial and logistical perspective. It is generally accepted that universities generate remarkable economic and social benefits only to the extent to

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<sup>1</sup> Sondergaard, Lars (2008): *The Role of Education and Training System in Accelerating Romania's Income Convergence*. The World Bank, Washington, D.C., 15<sup>th</sup> of April 2008

which public policies concerning the higher education sector are complying with the sustainable development and the functional mechanisms of the modern society.

What is showing a short retrospective analysis of the post war period?

First in the USA, then in the European countries, higher education was affected by the fever of increasing the access to education. Only few states were concerned with creating input levels that would ensure the preserving of an acceptable quality of the teaching-learning process, as well as a favourable balance between the resources used for fulfilling the two primordial functions of the university – education and research. A study published by *The Economist* in mid May 2005 concluded that: “The problem for policymakers is how to create a system of higher education that balances the twin demands of excellence and mass access, that makes room for global elite universities while also catering for large numbers of average students, that exploits the opportunities provided by new technology (on-line education), while also recognizing that education requires a human touch”.<sup>3</sup>

The catering of large number of students, disregarding the specific needs of the labour market generated the first mismatches in terms of level of education: the over-qualification put a pressure on the employability of the steadily amounting number of graduates. After the first cohorts of mass higher education graduates, two imbalances of the labour market were considered as education mismatches. On one hand, only a part of the graduates were able to find a job corresponding to their level and content of education. On the other hand, graduates diminished the employment opportunities of less educated people. Even if the jobs are not requiring higher educated competences, employers tend to ask for graduates and graduates accept frequently these positions in the labour market.

Employability of graduates has become a high priority in the reform of European universities which is enhanced by the Bologna Process and at the same time strongly challenged by the impact of the global economic and financial crisis on the labor market.

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<sup>2</sup> Zgaga, P. (2007): *Higher Education in Transition. Reconsiderations on Higher Education in Europe at the Turn of Millennium*. Monographs on *Journal of Research in Teacher Education*, Umea University

<sup>3</sup> Taken from Korca, Mihai (2006): *Role of Universities in the Knowledge-based Society and Economy. A Public Policy Perspective*. In Proceedings of the International Conference “*The Future of Europe: Challenges and Opportunities*”, ASE, Bucharest, 16-18 November 2006.

“When regarding the Romanian labour market it is worth to notice that the actual imbalances did not come up only with the economic crises. They have just met more proper conditions to deepen under the impact of the global crises. Labour market imbalances might be related to many factors and policies. An example in Romania’s case is the characteristic of the economic and social policies promoted in the recent past. They were not at all centred on an efficient motivation of unemployed persons to search for a work place. Another factor with a substantial contribution to the imbalances in the labour market is the hidden unemployment, which originates in the rather large subsistence agriculture of the country. Finally, there are significant structural mismatches between the professional and transversal competences a graduate can demonstrate and the current needs and expectations of a labour market”.<sup>4</sup>

This is not a singular symptom of the Romanian labour market. When regarding the unemployment rate of those aged 25 to 34 years in the OECD countries, one finds that the proportion of over six months’ unemployed persons with tertiary education has reached in 2007 an average of 42%, but in some countries long term unemployment is at a level of 60% or more, which suggests clear mismatches in the education for jobs in the graduate labour market.<sup>5</sup> These rates are currently even higher as the recovery in the labour market is still expected after the strong hit of the global economic and financial crisis.

#### **ARGUMENTS SUSTAINING SHARED RESPONSIBILITIES FOR THE EMPLOYABILITY OF GRADUATES**

Standards and contents of higher education have been among the drivers of the Bologna Process<sup>6</sup> from its very start in 1999 and the Lisbon Agenda 2000 enhanced significantly their role in achieving social efficacy and personal satisfaction of graduates in the labour market. Today, higher education providers appear to be more aware of the fact that design and delivery of study programs have to comply with requirements that would make it easier for graduates to find

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<sup>4</sup> For more details, see Dimian, Gina Cristina and Mihai Korca (2010): *A Matching Theory Perspective on Disequilibria in the Romanian Labor Market*. A paper presented in the 17<sup>th</sup> International Economic Conference organized by Lucian Blaga University, Sibiu, 13-14 May 2010

<sup>5</sup> OECD (2009): *Education at a glance 2009*, Paris

<sup>6</sup> Figel’, Ján: *Inaugural Speech of the European Commissioner for Education, Training, Culture and Youth at the UNESCO Forum on Higher Education in the Europe Region: Access, Values, Quality and Competitiveness*. Bucharest, 21-24 May 2009

jobs later in their professional life. This is a big change in the conduct of universities considered until the beginning of the 1990s real “*ivory towers*” of the modern society.<sup>7</sup> The pro-active attitude of universities in solving problems of the host community, here including the flexibility and adaptability of the offered study programs to the expectations of the labour market is often seen today as a way of responding to the needs of the society, but also as a way of attracting students and financial resources, of gaining competitive advantage and visibility in a crowded educational environment.

As higher education increased in terms of number of intakes and of diversification of the educational offer, the employability of the graduates has definitely become a topic of frequent debate allowing for contradicting arguments. The discussion focuses either on the personal satisfaction of a university diploma holder or on social efficacy of higher education institutions. Employability has been defined as “the ability to gain initial meaningful employment, or to become self-employed, to maintain employment, and to be able to move around within the labour market”<sup>8</sup>. In this context, the employability of graduates generates a two sided responsibility of the university in ensuring an easy labour market entry and a smooth labour mobility for the diploma holder:

- On one hand, students should get those academic qualifications – defined as knowledge, skills and abilities – which are expected and requested by the employers in the very moment of hiring a university graduate;
- On the other hand, graduates should be given through education the opportunity to keep, renew, complete or improve the level of initial qualification by lifelong learning programs available throughout their lifetime and professional career.

The progress of humankind towards the knowledge society is strengthening the dependence of the economy and public administration infrastructure on highly qualified specialists.<sup>9</sup> The awareness of the special role played by higher education institutions was triggered during the last decade by the Jacques Delors *Report to UNESCO* (1996), the *Bologna Declaration* (1999) and the *Lisbon Strategy* (2000). The ever changing workplace requirements (under the impact of the new information and

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<sup>7</sup> Scott, Peter (1998): *Shaking the Ivory Tower*. In: „*The UNESCO Courier*”. Paris, September 1998

<sup>8</sup> Bologna Follow Up Group (2009): *Report of the Working Group on Employability*. Draft prepared to ministers in charge with higher education for the Leuven and Louvain-La-Neuve Ministerial Conference, 28-29 April 2009.

<sup>9</sup> See also, OECD (2008): *Tertiary Education for the Knowledge Society*. Paris, vol. 2, Chapter 9: “*Strengthening ties with the labor market*”.

communication technologies and of the international openness of the labour market) have a common denominator: low skilled labour force is more and more replaced by high skilled persons, which shows a higher propensity towards complementary qualification and/or supra-qualification or interdisciplinary further education.

The current data and facts of the economic and financial crisis' aftermath which affects more or less all the countries around the world confirm the fact that low educated workforce is facing a higher risk of unemployment than high skilled personnel. The professional flexibility of the personnel possessing a tertiary education is by far higher than the low skilled employees.

Despite all the rhetoric and statistical evidence which persuade people to enroll a higher education program, graduates have more and more problems in getting a job. It is also proved that the time span required to enter the labour market after graduation is becoming longer and that job satisfaction is quite rare. This is a new feature of the educational mismatch in the labour market: knowledge and skills of graduates are not complying with those expected by employers.

A final observation: in the first months of economic recovery the unemployment rates remain high and the reason of this contradictory reality is originated in the deepening discrepancies between the standard competences of both graduates and non-graduates and the new, more flexible and more complex skills required by employers (new competences in the modern industries).

A survey of mid 2009 conducted among Romanian graduates of the last cohorts in four study fields (communication sciences, computer and information technology, law and mechanical engineering) shows that only 62% of the surveyed persons did not had difficulties in entering the labour market in the first 12 months after graduation, while only 17% of those employed declared to be professionally satisfied in the current job. There are, significant differences from a study field to the other, but it is a common fact that employers tend to be satisfied with the professional skills of graduates but are not at all satisfied with graduates of the recent cohorts when it comes to communication skills, adaptability to the specific requirements of integrating a team that assumes a professional task and distributes personal responsibilities for each member, etc.<sup>10</sup> The main concern is not focusing on knowledge performance or professional skills but on the lack of transversal competences and pro-active attitudes in concrete work environment. This belongs

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<sup>10</sup> Korka, Mihai – coordonator (2009): *Educație de calitate pentru piața muncii – Quality Education for Labor Market*. Editura Universitară, București. Also available on: [www.aracis.ro/proiecte](http://www.aracis.ro/proiecte)

to a recently discovered new feature of educational mismatch. It touches this time the curriculum design, which does not meet the needs of the labour market. Further more, it touches the educational content of the disciplines, which focus too much on technicalities but neglect fundamental operational skills. It is a clear mismatch in the skills of the graduates, skills that allow for a rapid and effective entry in the professional life.

Qualitative research reports in various businesses and industries illustrate a variety of practices both on employers' side and on education providers' side which can either perpetuate or eliminate job-skill mismatches, over-qualification or insufficient training. "Changes in the nature of skill demand are often dictated by labour market constraints or by market pressure."<sup>11</sup> It is generally recognized that there is little workforce planning actively linked to the business mid- and long-term planning. On the other hand, education providers and particularly universities should be more responsive to the needs of a continuously changing labour market. That reveals two different concerns in modern education and training:

- To strengthen the dialogue with employers and other external stakeholders in the design of new curricula and in the delivery of study programs. This concern is only one of the dimensions that express the need to improve the university communication to the rest of society in order to make more transparent, more understandable the reforms taking place in the higher education sector. Employers rank first when it comes to the correct understanding of learning outcomes;
- To change the quality culture in universities and make employability of graduates a key feature of personal and institutional responsibility. Every member of the academic community should be aware of his/her role in the success of each graduate searching for a job. Employability of graduates is not the sole responsibility of the university or of the managing team. The student himself and each member of the teaching and research staff which is involved in the teaching and learning process should act as co-responsible individuals having internalized their contribution to the labor market entry of the graduates.

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<sup>11</sup> Bevan St. and Cowling M. (2007): *Job Matching in the UK and Europe*. The Work Foundation, London

## THE ECONOMIST'S PERSPECTIVE ON GRADUATE LABOUR MARKET MISMATCHES

The accuracy of the match between graduate education and the labour market needs has attracted the attention of economists and sociologists over the last four decades<sup>12</sup> as the number of graduates amounted sharply and the needed time to get a job became longer and longer.

The main reason for this interest is that education-job mismatches reflect social inefficacy and financial inefficiency of public and private investment in higher education. It means that irreversible decisions to invest in the initial higher education of the human capital are made by the state and/or by individuals and their supportive families in a context of uncertainty regarding the outcome in terms of getting an appropriate job corresponding to the content and level of qualification. The magnitude and diversity of the many-faceted education-job mismatches are still poorly researched in most of the countries.

On the other hand, education-job mismatches go alongside with other critical issues of the graduate labour market like: over- and under-qualification of available labour force, job dissatisfaction, underpayment of over-qualified employees, skill mismatches, under-utilization of educated skills, decreasing trends in the interest for certain study field in higher education, higher unemployment rates for the least skilled people, cross border migration in search for a better job (inward and outward migrant workers with various levels of education), etc. All in all, they reflect the complexity of disequilibria in a more or less open labour market and the difficulty in designing long term educational policies aiming at consolidating the graduate labour market.

In more recent years, higher education analysts, education policy makers and university managers were also focusing on labour market mismatches of the graduates and on their impact. Empirical studies revealed a deepening shift between learning outcomes and labour market needs and expectations, lack of communication between universities and the different categories of employers,

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<sup>12</sup> Among the first research papers dedicated to the topic, see, for instance: Berg, Ivar (1970): *Education and Jobs. The Great Training Robbery*. New York, Praeger Publishers; Kallenberg, Arne and Aage Sorensen (1973): *The Measurement of the Effects of Overtraining on Job Attitudes*. In: *Sociological Methods and Research*, 2(2); Bisconti, Ann and Lewis Solomon (1976): *College Education and the Job. The Graduates' Viewpoint*. Bethlehem, Pa, the CPC Foundation; Freeman, Richard B. (1976): *The Over-educated American.*, New York, Academic Press; Jovanovic, B. (1979): *Job Matching and the Theory of Turnover*. In *Journal of Political Economy*, 87 (5).

insufficient transparency concerning the differences in terms of skills and competences of the three cycle Bologna system of higher education, insufficient involvement of professional associations and of representative employers in the shared responsibility for higher education learning contents and learning outcomes.

Empirical evidence shows that lack of professional career advice for students, poor learning outcomes and skill mismatches of graduates in the labour market tend to negatively influence the aggregate grading systems over time in those fields of study, departments or institutions that are less demanded by students and by the labour market.<sup>13</sup> This aspect is becoming even more evident in the context of shrinking demography in most of the European countries which ends in smaller number of new enrolments (freshmen) in universities and unfair competition between the many local and international higher education providers.

The increase of unemployment among individuals having graduated a higher education program, the high number of graduates accepting jobs which require lower education and the many impediments in moving from a first job to a second one represent only the more visible features (tangible in terms of measurement) registered as new features of graduate labour market mismatches.

### WHAT KIND OF SOLUTIONS ?

Higher education experts and policy makers at country and at university level have imagined a threefold package of solutions aiming to diminish the impact of labour market mismatches for graduates:

- Quality of learning outcomes should be improved;
- Qualifications' framework for university graduates should be developed as a transparent means to support employability and mobility in the labour market;
- Employability of graduates should become reference points for the strategic development of universities by taking into account that a modern, dynamic society is driven by new knowledge, new technologies, and new information and communication skills.

During the first decade of the new millennium learning outcomes, student centered education and content standards fit to respond to the graduate labour

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<sup>13</sup> An interesting econometric analysis confirms the asserted idea based on empirical data. See, for instance, Bagues, Manuel F., Mauro Sylos Labini and Natalia Zinovyeva (2007): *The Endogeneity of University Grading Standards and Labour Market Mismatch: Evidence from Italy*. Second

market expectation belong to the key topics discussed in each country of the European Higher Education Area.

Most of the quality assurance agencies in Europe have launched a review of their methodology concerning the evaluation of the educational efficacy. Criteria, standards and performance indicators are related to quantitative and qualitative needs of the graduate labour market expressed in terms of knowledge, skills and other learning outcomes required by the functioning of the modern companies and organizations in the public and private sector.

On their side, leading European universities are experiencing the implementation of new tools in the quality management of the study programs they offer in the context of a vivid competition for students and complementary resources. The employability of graduates is the best tool they might use in order to show the competitive advantage to study in a university. The higher the employment rate of graduates is the less labour market mismatches are accounted.

RESEARCH PAPER

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## **CRISIS INVERSION STRATEGIES – THEORY OR REALITY IN ROMANIA OF 2009?**

Ruxandra CIULU\*

***Abstract:** The world crisis has begun showing its effects in Romania in October 2008. Still, the immaturity of Romanian authorities in the political and economic fields, as well as the enthusiasm of economic development led to an unconscious state of mind regarding the crisis. Therefore, Romanian companies have not started preparing for the crisis until they began feeling its effects. Also, a large number of Romanian managers are not familiar with crisis inversion strategies and accept crisis as an invincible necessity. Still, in other economies we can find examples of managers who fight for saving their companies and even try gaining competitive advantage based on the crisis. We have tried to find out if Romanian managers belong to the second type. Mainly, the study focuses on strategies adopted by Romanian companies in order to counterbalance or, at least, ensure their survival during the world crisis.*

***Keywords:** crisis, Romania, strategy, inversion*

***JEL Codes:** E32, G01, L19*

### **ARGUMENT**

Fluctuations in economy are natural phases of an economic cycle. Generally, economists agree that the main phases of a business cycle are expansion, prosperity, contraction, and recession (if recession is deep, it can be considered ‘crisis’). Some argue that “an economic crisis is not a temporary weakness of the economy, but the economic expression of a wider issue, which raises questions about world philosophy and which influences all countries in the world” (Didier,

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1998). No matter how we define it, specialists are unanimous that companies react too late and too slow (Brilman, 1985). There may be several reasons for these reactions: anticipation that circumstances will be better; belated use of economical indicators; confusion between structural crisis and circumstacional evolution; absence of monthly calculated indicators; not enough exigency from managers and shareholders; accounting anesthesia; no correlation between company results and inflation rate; too optimistic budgets; inability to manage the crisis; intervention from authorities (Brilman, 1985).

In the 1960s, the historical existence of business cycles was perceived as the outcome of a lack of economic insight (Solomou, 1998). Business cycles were very long at the end of the 19<sup>th</sup> century (up to 20 years), they shrank to 5 years after World War II and they lengthened again after 1970 (up to 10 years).

The two latest notable crises (the Asian crisis of 1997 and the Argentine crisis of 2002) have offered important insight regarding misfunctionalities in the industry. Two factors are common to the two crises: quality of macroeconomic policy and ingenuity of markets (V'yugina, 2009).

The current world crisis is considered by some the most serious one the world has even experienced. Developed countries have been very cautious and prepared for the crisis at least a year in advance, while Central and Eastern European countries (in particular, Romania) have been mostly preoccupied by economic growth, internal market consumption and means to attract foreign investors instead of readjusting macroeconomic policies. The purpose of this paper was to analyze the situation of Romania and to try to identify strategies used by managers of Romanian companies in order to try overcome the crisis. The study was performed between March and July 2009.

### **WHY THE CRISIS?**

The president of Federal Reserve, Ben Bernanke, believes that the current world financial crisis is the most severe one since the 1930s (Macovei, 2009). He supports the idea that the origins of the global economic decline can be found in the disfunctionalities of the commercial and capital balance in the years 1990s. Bernanke explained that the imbalance has been generated by the fact that, during a decade, emerging economies (e.g. Asian countries) benefited from capital coming from American or partner countries investors and, therefore, developed countries recorded important exports of financial capital.

Certain specialists tend to consider the current crisis as an inevitable, but not extraordinary accident, a consequence of the very low interest rates used in the past few years in the United States and in Europe (Daianu, 2008 III).

Still, an analysis of the crisis cannot exclude structural causes. The globalization of financial markets, as well as financial innovations, combined with weak or lack of regulations and with conflicts of interest became premises for the current crisis. But how was it possible that the same specialists who draw up economic policies ignored the strong warnings, the analyses and the conclusions of previous crises? Some specialists dare to consider that very important financial interests played a major part (Daianu, 2008 I).

In 2005, professor Nouriel Roubini<sup>1</sup> warned that home prices had created a wave which would sink the economy. At the time, he was considered a Cassandra and called “Dr. Doom”. In September 2006, he warned the International Monetary Fund that the crisis was about to begin and that the United States would be confronted with a housing bust, an oil shock, sharply declining consumer confidence and, ultimately, a deep recession. By the end of 2008, most of its predictions were confirmed, while his descriptions of crisis causes and effects were proven correct.

Paul Krugman<sup>2</sup> is well-known for its criticism towards the Bush administration and towards Alan Greenspan, former president of Federal Reserve, whom he accuses of disregarding some warnings, of having blind confidence in the free market and of not reading the signs that the financial system created after the 1929-1933 crisis has outgrown defenses. Krugman supported the idea that Alan Greenspan is “like a man who suggests leaving the barn door ajar, and then – after the horse is gone – delivers a lecture on the importance of keeping your animals properly locked up” (Krugman, 2008).

If analyzing the situation of the past twelve months, as well as taking specialists’ opinion into consideration, we can appreciate that the most troubling effect is massive unemployment. “The financial crisis may generate loss of 20 million more work places by the end of 2009”, warned the General Manager of the

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<sup>1</sup> Economics professor at Stern School of Business, New York University and president of RGE Monitor; following a PhD at Harvard University, he started his research and strategy draw up at Yale, while working for the International Monetary Fund, Federal Reserve, The World Bank and Bank of Israel

<sup>2</sup> Publicist for the “New York Times” and Nobel Prize winner for economics in 2008

International Labor Organization, Juan Somavia, in December 2008. He even added that “these numbers can be worse and cause a severe, long and global social crisis, based on the crisis impact on the real economy” (Leclerc, 2008).

### **THE CRISIS IN THE ROMANIAN CONTEXT**

During the year 2008, Romania recorded the highest economic growth after 1990. The GDP grew by 7.1% (Mediafax, 2009) along the year 2008 and the predicted level had been 9.1%, should the effects of the crisis had not begun being felt in the fourth quarter. The Romanian authorities had estimated growth of 2.5% in 2009, but the European Commission, the International Monetary Fund and other international organizations were less optimistic. We expected at a decrease of 5.7% in GDP for the year 2009 (Comache, 2009) and we recorded a decrease of 6.6%.

The National Bank of Romania has been asked several times to explain its position regarding the fact that Romania would not be severely affected by the crisis. Apparently, the Romanian financial market is still primitive. For example, at the end of 2008, the percentage of financial intermediaries is 25% in Romania, compared to 80-90% in the developed economies of the European Union (Daianu, 2008 II). The country has felt the effect of turbulences caused by certain foreign investors, who decided to close their positions in Romania, similar to what happened in other neighboring economies (e.g. Hungary, Poland). In August 2008, Romania had not yet felt the effect of overheating in the economy. Specialists argued that the Romanian real estate market is not confronted with a crisis, as it is just beginning to grow and it would take about 20 years to become saturated. The real estate market was effectively blocked when the National Bank of Romania restricted the population access to bank loans.

During the fourth quarter of 2008, the National Bank seemed to be able to counterbalance the effects of the crisis and the governor, Mugur Isărescu, was very optimistic: “we have to be thankful that we have recorded GDP growth in the past ten years. We now have the change to overcome the world crisis. We can even consider our country a miracle, as the crisis has offered us some advantages” (Ziarul Financiar, 2008).

The manically depressive attitude of the Romanian government towards the crisis is awkward, to say the least (Chirovici, 2008). Authorities are in the situation of a medicine who, during one year, has assured a person (the national economy) that he/she is in good health and, all of the sudden, he has to inform him/her that

he/she is going to die. At the end of the year 2007, when all Europe was concerned for the crisis, Romanian authorities were asked if they had performed a crisis impact study for Romania. Their answer was unimaginable: “what crisis?” At the EU and G8 level, the crisis was the main topic, while in Bucharest the environment was unrealistic: the economy developed, billions of Euros could not wait to enter the country and the country had no reason to worry. It is only at the end of 2008 that Romania entered the depressive phase: we were expecting a true economic cyclone, unemployment rate grew and specialists became less optimistic.

### CRISIS INVERTION STRATEGIES

This type of strategies is used when a valuable business is in crisis. The main purpose is to block and inverse the sources of financial and competition weaknesses. The first step is to correctly diagnose problems and to identify the level (decision, implementation, execution or evaluation) at which they have appeared. The most frequent cases are (Ciobanu & Ciulu, 2005):

- ignoring interest compression effects generated by market forestall through aggressive price cuts;
- underused production capacity and, therefore, increase in fixed unitary costs;
- exclusive concentration on R&D efforts to improve position and profitability, followed by innovational failure;
- investment in expensive and long term absorptive technologies;
- frequent change of strategy;
- vassalage to competitive advantages of successful competitors.

There are five ways of approaching crisis inversion strategies (Hofer, 1980):

1. *strategy revision* involves rebuilding competitive position, adjustment of internal and functional area strategies, rethinking strategy following a merger or acquisition based on new company strengths or concentration on a customer or product area. Before taking action, it is necessary to perform a SWOT analysis. A successful business recovery must always be based on strengths and attractive development opportunities;
2. *fast income growth* targets sales improvement by cost cuts, promotional activities, fast product and after-sales improvement. If demand is not price sensitive, prices should be increased, not diminished. This type of strategy is useful when operating budget is limited and the company is confronted with overcapacity. The grouped offer involves selling separable products and

services to consumers in packages. For example, IBM grouped software, hardware and service, which created economies of scale, pushed them up the learning curve generated network economies and salespeople productivity increase. These are all levers for cost cuts. Therefore, package price is lower than the sum of its constituents. Moreover, grouped offer allows the company to differentiate by selling only some package components. Cross-subsidy implies deliberate sales of a basic product for a low profit or even without profit in order to sell more profitable products. It is the case of Gillette, who successfully applied the ‘razor and safety razor’ strategy. The safety razor was sold with no profit, while the razors are extremely profitable.

3. *cost cuts* are made possible by strict cost control, elimination of unuseful positions and activities, productivity growth by using modern production equipments and postponing investments.
4. *sales of assets* (Heany, 1985) are used when business winding is a critical issue and can be solved by sales of equipments (patents, machines, land, profitable subunits) or by reorganization for economic purposes (eliminating low-profitability products, selling or closing old capacities, reducing work force); many times, money saved in these ways is reinvested to consolidate the main activity.
5. *combined efforts* (Finkin, 1985) generally involve changing the management team; the new management has the freedom to operate any changes it considers necessary. The more difficult the problems which need to be solved, the more necessary their multiple approach at all company levels.

The crisis inversion strategies are risky and often fail due to bad choice of acquisition moment or due to early drain of financial resources or necessary businessman talents.

Also, it is important to evaluate the most frequent causes of bankruptcy, now and thirty years ago in order to identify changes in environment and in company behavior. A statistics published in 1977 by the French ‘Caisse Nationale des Marchés de l’État’ (CNME) identified nine main causes of bankruptcy (Brilman, 1985): customer weaknesses (21%); overstocking (11%); bank pressures (11%); illness or death of the business initiator (10%); over dimensioned personnel expenses (10%); accounting mistakes; failure to price product correctly (9%); decrease of sales (8%); expropriations (8%); inadequate management (6%).

In 2009, eleven causes of bankruptcy can be identified, as following (Mason, 2009): choosing a business that isn't very profitable; inadequate cash reserves; failure to clearly define and understand your market, your customers, and your customers' buying habits; failure to price your product or service correctly; failure to adequately anticipate cash flow; failure to anticipate or react to competition, technology, or other changes in the marketplace; overgeneralization; overdependence on a single customer; uncontrolled growth; believing you can do everything yourself; putting up with inadequate management. Two of these causes (failure to price product correctly and inadequate management) are maintained in the top causes of bankruptcy, while several others overlap, due to environmental changes.

### THE ROMANIAN REALITY – CASE STUDY

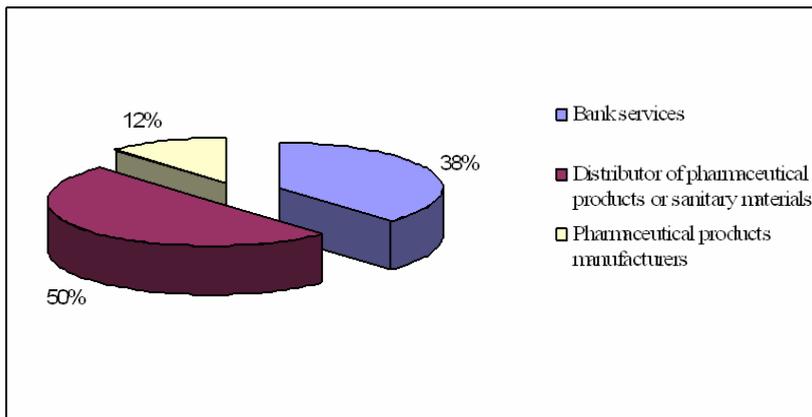
Based on the economic situation of Romania and on the very late reaction of Romanian authorities, we decided to perform a study among companies which are active on the Romanian market. The main purpose of this study is to identify managerial perspective on the crisis and the actions they have taken in order to ensure survival by the end of the crisis. By choosing two different domains, the banking system and the distribution/production of pharmaceutical products and sanitary materials, we have intended to give a full picture of crisis effects and crisis inversion strategies used by companies. The sample was chosen based on the number of companies acting in each domain. The list of banks approved by the National Bank of Romania includes 40 banks, while the number of distributors in the pharmaceutical and sanitary field includes about 70 companies. Also, I approached 5 of the top 10 pharmaceutical companies in terms of sales value in Romania (4 multinational, 1 local). Questionnaires were sent and filled in during the month of March 2009. Response rates are included in Table 1:

**Table 1** *Response rates to questionnaires*

Field	Number of questionnaires sent	Number of questionnaires received	Percentage
Bank services	20	16	80%
Distributor of pharmaceutical products or sanitary materials	35	21	60%
Pharmaceutical products manufacturers	5	5	100%
TOTAL	60	42	

The distribution of respondents by field is presented in Figure 1.

The questionnaire includes 11 questions, among which 10 strictly refer to the crisis and one is meant to obtain general information about companies. Out of the ten questions, 4 are meant to identify problems with which companies are confronted and 6 aim at identifying strategies used in their attempt to counterbalance crisis effects.



**Figure 1** Percentage of filled-in questionnaires by field

Answers provided by distributors and manufacturers are rather similar, but fairly different from those provided by banks. Since the crisis began showing its effects in Romania (in September-October 2008) until March 2009, distributors and manufacturers recorded stagnation or even growth in sales, benefits, market value, customer fidelity, possibility to implement company strategy, new business opportunities, ability to invest in new businesses, in mergers/acquisitions or even in entering new markets. On the other side, banks reported stagnation or weaker results in all the above-mentioned fields. The only two fields on which all respondents agreed upon were liquidity level and ability to access capital, for which they all report drawbacks.

Regarding sales for the fourth quarter of 2008 compared to the fourth quarter of 2007, banks recorded declines of 1% to 20%, even though some banks reported increase of 1% to 20%. The crisis did not have a major impact on distributors and manufacturers by the end of 2008, as demand for their products increased during the same period and some even improved their production capacity in order to meet demand. Obviously, all companies were affected by payment delays, increase in

costs of finance and cuts of general operating expenses. In order to try counterbalance crisis effects, most companies resorted to cuts of administrative expenses, rent renegotiations, improvement of operational efficiency of the company, reevaluation of profitability lines of products / customer segments.

In 2009, the main points of interest were cost cuts, maintaining market share, development of new products/services, risk management, management of public relations and personnel cutbacks.

In terms of planning, most companies established their budgets based on the national currency / Euro parity. During October 2008 – March 2009, the national currency was devaluated from 3.5 lei/Euro to 4.3 lei/Euro and some specialists estimated an exchange rate of 4.8-4.9 lei/Euro by the end of 2009. This situation forced companies to reevaluate their budgets and to take into account an average exchange rate of 4.2-4.4 lei/Euro for the year 2009. By the end of 2009, the average exchange rate reached 4.2373 lei/Euro. In order to try protecting their business, most companies resorted to daily transactions and used several currencies in their activity.

Manufacturers and distributors were rather optimistic in terms of profit for the year 2009, while banks were less optimistic.

The main purpose of the questionnaire was to identify the crisis inversion strategies used by companies present in Romania since the fourth quarter 2008 until the first quarter 2009. Most companies used strategy revision, cost cuts and combined efforts. On the contrary, none of the companies included in this study had the intention to use sales of assets as strategy.

### **WHAT SHOULD HAPPEN IN ORDER TO OVERCOME THE CRISIS?**

The experience of national and regional crises in the past decades allows specialists to identify key indicators which need to be monitored in order to try forecasting crises. These are (V'yugina, 2009): commercial sector cost erosion; pyramidal nature of national debt; interest coverage ratio; return on bank assets; rapid growth of credit portfolio; contraction of deposits; non-performing loans (NPL) ratio; growth and maturity of credits to foreign banks; "bubble" asset price.

Due to the financial aspects of the crisis, specialists support the idea that the world will not be able to overcome this crisis without a systemic reform of the banking system. Banks must be forced to consolidate their balances, not to use special vehicles (SPVs, different "conduits"), to considerably improve the internal

precautions of banks and to analyze relationship between shareholders and management (Daianu, 2008 II).

Also, it is extremely important for certain people to understand that the “free market” is not the same as “deregulated market” (Daianu, 2008 II). If we are unable to regulate markets, inevitable consequences are market misfunctionalities, which implies important costs for most participants in the market economy. The thesis that markets function perfectly, that they are effective in no matter what circumstances is considered nowadays a fantasy, this being especially true for financial markets. Therefore, the crisis does not have only cyclic reasons, but also structural ones, which caused lack of transparency in financial markets due to globalization of transactions, regulation problems, multitude of conflicts of interest, use of inadequate quantitative methods, etc.

The financial innovation of the past decades encouraged financial intermediations, but reduced transparency of financial markets, which is rather worrying. Without financial transparency, without possibilities to realistically evaluate the risk of a transaction, without trying to overcome major conflicts of interest, confidence in financial markets and, finally, in the economy, are lost.

“Developing countries are hit by successive shocks; at the same time, developed countries are in recession and banks have limited loans. The countries of Central and Eastern Europe are most threatened”, argued Robert Zoellick, president of The World Bank (Șerbănescu, 2009). There is a simple explanation. In Central and Eastern Europe, private foreign capital has caused a real chaos in the past twenty years. This was an ideal territory for strong and fast expansion. The reason was to transform the region into a consumption market for western products.

Situation in the European Union is fairly serious. In all EU and also in Romania, the index of economic confidence has decreased since September 2008 until March 2009, while afterwards it recorded growth (BT Asset Management, 2009). Notable exceptions are retail sales and managers, who are more optimistic, due to the fact that May was the fourth consecutive month when the index records growth (BT Asset Management, 2009). During the past few months, Romanian consumers have been more pessimistic than the rest of the EU regarding the evolution of the economy.

There are businessmen who argue that Romania has a unique occasion to develop even during the crisis, if the country has the ability to attract foreign capitals and companies who relocate from other countries (Bloombiz, 2008). Also,

it is absolutely necessary to stimulate consumption, demand, and loans as they are the only means to overcome recession.

Recently, Romania has recorded a new concern regarding its competitive capacity. Based on a statistics published by Deloitte, Romania has only 30 out of the first 500 companies in Central Europe in terms of revenues in 2007, 50% of those detained by Czech Republic and Hungary and 16% of those detained by Poland (Ziarul Financiar, 2008). Another statistics shows that only 5% of Romanian small and medium size enterprises (SME) are competitive on the European market (Balea & Sava, 2008). If Romania does not change strategy, the post-crisis situation can become even more worrying.

### CONCLUSIONS

Romania is just a drop in the ocean of the world economy, but it is ‘our drop’ and everything that goes right or wrong affects our everyday lives. We have not prepared for this crisis, instead we preferred to ignore it and consider that it will have effect only beyond our borders. The same mentality influenced many managers in Romania, who are now in difficult positions and need to justify misfunctionalities in their companies.

The study reveals that all companies seem to be influenced by liquidity levels, ability to access capital, by payment delays and cuts of general operating expenses. Companies are forced to renegotiate rent, improve operational efficiency of the company and re-evaluate lines of products / customer segments profitability. These are all realities of nowadays world economy and most companies need to address these issues.

What makes the difference and draws the line between successful and unsuccessful companies are the way they address these issues and, more exactly, strategies used by management. Most respondents reported use of strategy revision, cost cuts and combined efforts. On the contrary, none of them has been using or has the intention to use sales of assets as a strategy. This proves conservatism and, maybe, a typical Romanian mentality, originating from the communist era (‘just keep it – you don’t know when you are going to need it’).

Unfortunately, we have not identified any organization whose managers are able to use the crisis for growth, when many competitors encounter problems in maintaining their level of sales or even their market share. Instead, they are all

going for the 'classical' approach, trying to reduce costs and ensure survival until the end of the crisis.

A possible continuation of this research would be a regional study on strategies used by managers in Central and Eastern Europe in order to overcome the crisis and, after the crisis ends, to evaluate the results they obtained.

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## FOREIGN DIRECT INVESTMENTS AS A FACTOR FOR ECONOMIC GROWTH IN ROMANIA

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**Abstract:** *The main aim of the article is to present the influence of foreign direct investments (FDI) on the economic growth in Romania between 2000 and 2009. The article consists of two parts. The first part presents a theoretical analysis of the FDI-led growth hypothesis. This part overviews empirical research, while the next one analyses the importance of foreign direct investments for economic growth in Romania using the Vector Autoregression Model (VAR). The elasticity coefficients of gross domestic product (GDP) to changes in gross fixed capital formation, employment, exports of goods and services, and foreign direct investments in Romania are estimated on the basis of impulse response function. Finally, the author offers a decomposition of the gross domestic product variance to assess the degree of GDP determination by changes in gross fixed capital formation, employment, exports of goods and services, and foreign direct investments in Romania.*

**Keywords:** *Economic growth, foreign direct investments, vector autoregressive model*

**JEL Codes:** *F43 – Economic Growth of Open Economies*

### INTRODUCTION

The main aim of this study is to analyse the factors which determined the growth rate in Romania during 2000-2009, with a special emphasis on the importance of the inflow of foreign direct investments. In this paper, we use methods from literature used in international economics and international finance, as well as econometric methods (vector autoregressive model-VAR). All statistics

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used in article come from statistical databases of the International Monetary Fund (International Financial Statistics).

### **THE ESSENCE AND EFFECTS OF FOREIGN DIRECT INVESTMENT INFLOW**

In the economic literature, there are many theories explaining the role of foreign direct investments in the process of the economic growth. According to the theory of development, the foreign direct investments can contribute to increase of the real income of the host country. However, the inflow of foreign direct investments allows the rise of savings in the host country above the level of internal capital accumulation. In this case, the inflow of foreign direct investments stimulates internal investments. Furthermore, the inflow of foreign direct investments, leads to so-called externalities (technology spillover effects) (Carkovic, Levine 2002). Of course, due to new technologies and as a result of investments in infrastructure (e.g. roads and factories), foreign investors may help reduce the distance to highly developed countries (Romer 1993). From this perspective, the inflow of foreign direct investments can contribute to the increase of productivity of all companies, not only those that directly receive foreign capital. In addition, the inflow of foreign direct investments can improve overall economic growth by increasing the degree of competition in the domestic market and greater efficiency of local companies. Furthermore, international capital mobility may contribute to reducing the capacity for national government to continue its erroneous development policy (Adams 2009).

### **THE IMPORTANCE OF FOREIGN DIRECT INVESTMENTS IN ACCELERATING ECONOMIC GROWTH IN THE LIGHT OF EMPIRICAL STUDIES**

There is relatively small number of empirical analyses in domestic and foreign economic literature concerning the importance of foreign direct investments (FDI) for the host country, carried out using econometric models. Most results of macroeconomic analyses suggest the existence of relatively low and positive impact of FDI on economic development in surveyed countries. These results show that the ability of individual economies to use positive externalities related to the inflow of foreign direct investments are limited by conditions prevailing in the host country, such as the level of development, local financial

markets and the level of education of the population which determines the absorption capacity. Moreover, many empirical studies on the role of foreign direct investments in a host country suggest that the inflow of these investments is an important source of capital, a supplement of national private investments and, usually, it involves a new employment and import technology to the host country, which leads then to a higher growth of the economy (Chowdhury, Mavrotas 2006).

Carkovic and Levine (2002), analyse the relationship between the inflow of foreign direct investments and economic growth on the basis of the panel data, covering 72 developed and developing economies. These studies were carried out using ordinary least squares (OLS) and using generalized method of moments (GMMS). The results of these studies show insignificant connection between the inflow of foreign direct investments and economic growth in analyzed countries. Borensztein, De Gregorio, Lee (1998) and B. Xu (2000) prove that the inflow of foreign direct investments involves the inflow of technology to the host country which leads to higher growth of host country, but only if the country reaches so-called minimum threshold of human capital resources. Alfaro, Chanda, Kalemli-Ozcan, Sayek, (2006), Durham (2004) and Hermes, R. Lensink (2003) provide evidence that only countries with a relatively well-developed financial market system reach substantial benefits from the inflow of foreign direct investments, in the form of faster economic growth.

However, Balasubramanyam, Salisu and Sapsford (1996) analyze the impact of FDI on economic growth in developing economies using ordinary least squares. The results of these tests show the positive impact of foreign direct investments on economic growth in developing countries applying the export promotion strategy. Simultaneously, such relations do not exist in developing countries applying the import substitution strategy. Moreover, Borensztein, De Gregorio, and Lee (1998) conduct studies on the role of foreign direct investments in the diffusion of technology and economic growth. The authors conclude that the inflow of foreign direct investments has a positive impact on economic growth, but the sizes of these benefits depend on human capital resources available in the host country.

Finally, Bengoa and Sanchez-Robles (2003) claim on the basis of studies concerning the link between the inflow of foreign direct investments and economic growth in Latin American countries that the inflow of foreign direct investments has indeed a positive impact on the growth of the country. Both confirmed the hypothesis of Borensztein, De Gregorio, and Lee (1998) that the ultimate impact of

these investments on the rate of economic development of a country depends on many different conditions prevailing in the host country.

### MODEL OF ECONOMIC GROWTH

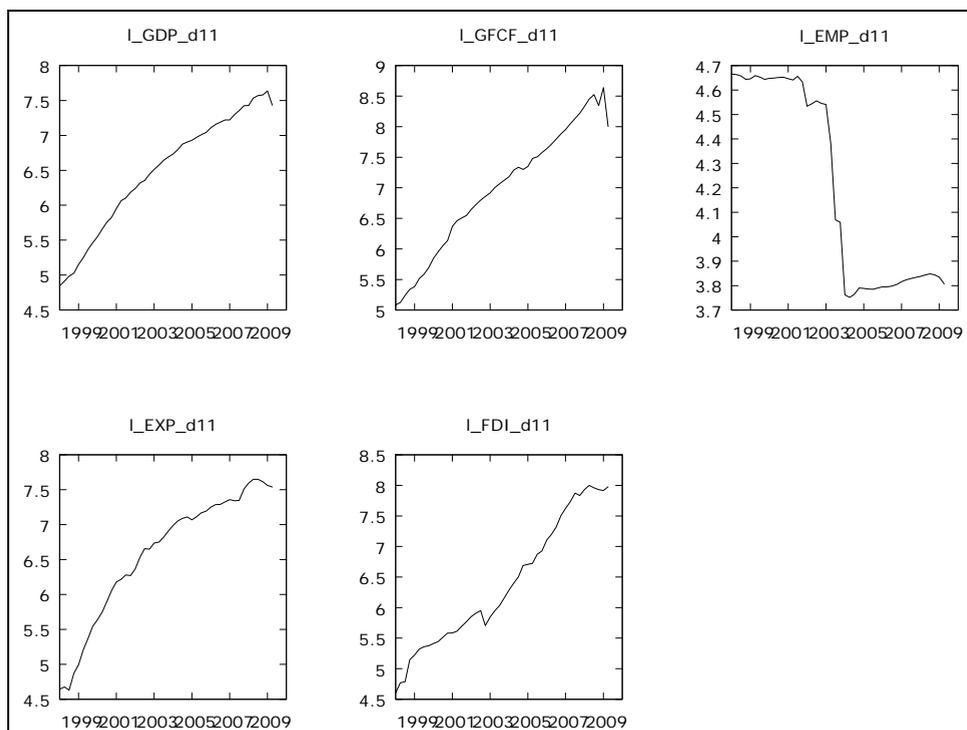
In order to analyze the connection between the inflow of foreign direct investments and the economic growth of the host country, we used the model constructed on the basis of Brocka (2005) model. This model consists of five variables, and presumes that the dynamics of economic growth (GDP) is a function of the country's labor resources, gross fixed capital formation, the value of national exports of goods and services, and the value of foreign direct investments inflows.

$$GDP_t = f(GFCF_t, EMP_t, EXP_t, FDI_t) \quad (1)$$

where:

*GDP* – nominal, gross domestic product;  
*GFCF* – gross fixed capital formation;  
*EMP* – labor resources (employment);  
*EXP* – exports of goods and services;  
*FDI* – the inflow of foreign direct investments;  
*t* – analyzed period.

All the above mentioned time series have the quarterly frequency and cover the period from the first quarter of 2000 to the second quarter of 2009. The series was singled out seasonal factor, because the existence of several temporary seasonal factors could lead to problems in interpreting the changes of variables in the reviewed period. To eliminate seasonal factors, we used used X12-ARIMA procedure. The indexes of analyzed variables in Romania in the period 2000-2009 are presented in Figure 2.



**Figure 2** Dynamics of gross domestic product, labor resources, gross fixed capital formation, the value of national exports of goods and services, and the value of foreign direct investments inflows in Romania in the period 2000-2009

Source: Own calculations on the basis of *International Financial Statistics*, (2010).

Correlation coefficient of the gross domestic product and gross fixed capital formation in Romania during 2000-2009 amounts to 0.97, which is a proof of strong linear relationship between these variables. Moreover, there could be observed a high, negative linear interdependence of gross domestic product and employment in Romania. Namely, the correlation coefficient in the examined period is close to -0.87. In turn, the correlation coefficient of the dynamics of the gross domestic product and exports of goods and services is at a higher level and amounts to 0.98, but the correlation coefficient of gross domestic product and inflow of foreign direct investments in Romania equals 0.94. Therefore, on the one hand, calculated correlation coefficients point at the strongest linear relationship between change of the gross domestic product and exports of goods and services, but on the other hand, they point at the weakest linear relationship between the dynamics of the gross domestic product and employment in Romania.

In order to examine the role of foreign direct investments in stimulating the economic growth in Romania, we used the Vector Autoregression Model (VAR). It was necessary to identify stationarity of the analyzed time series. Before using the VAR model assessment, it was necessary to identify stationarity of the analyzed time series. To this purpose, the Augmented Dickey-Fuller Test (ADF) was used.

Results of these tests are shown in following table.

**Table 2** Results of stationarity

Time series	Integration row
GDP – nominal, gross domestic product;	$I(0)$
GFCF – gross fixed capital formation;	$I(0)$
EMP – labor resources (employment);	$I(2)$
EXP- exports of goods and services;	$I(0)$
FDI – the inflow of foreign direct investments	$I(1)$

Source: Own calculations on the basis of *International Financial Statistics*, (2010).

The point of departure for the model of economic growth in Romania is an analysis of the so-called distribution chain proposed by Blanchard in 1982. The distribution chain is a series of economic shocks between which a cause and result relation occurs over the same time in which the shock occurred (Blanchard, 1982). In the analyzed VAR model, the distribution chain looks as follows.

$$FDI \rightarrow EXP \rightarrow LAB \rightarrow GFCF \rightarrow GDP \quad (2)$$

Adopted chain distribution stemmed from the fact that the inflow of foreign direct investments contributes to the growth of exports, and this, in turn, generates employment in exporting companies and cooperating firms. Employment growth leads to increase of consumer demand which generates national investments and economic growth.

Naturally, this type of approach has to be revised and in the VAR model an appropriate lag length between variables has to be taken into account, as there is no immediate cause-and-effect relations in economy. For the purposes of the analysis, one lag period (one quarter) between explanatory variables is adopted. The choice of lag lengths is in line with results of the information criteria of the Akaike, Schwartz-Bayesian and the Hannan-Quinn models. According to these criteria, a model with one lag length is characterized by the highest information capacity.

Subsequent step of the analysis is a measurement of the strength of an influence of determining factors on economic growth in Romania. To this purpose, the impulse response function has been used, that is a function of the economic growth response to an impulse of a given factor (gross domestic product, gross fixed capital formation, employment, exports of goods and services, foreign direct investments). The elasticity coefficients of gross domestic product to given determining factors after the period  $t$  are defined by the following equation (Cholewiński 2008).

$$E(z)_t = \frac{\sum_{i=1}^k \Delta z_{t-i}}{\sum_{i=1}^k \Delta s_{t-i}} \quad (3)$$

where;

$\Delta z_{t-1}$  – change of the gross domestic product, in the period form „ $t-i$ ” to „ $t$ ”;

$\Delta s_{t-1}$  – change of gross fixed capital formation, employment, exports of goods and services and foreign direct investments, in the period form „ $t-i$ ” to „ $t$ ”.

Change in the gross domestic product equal the values of the impulse response function of the GDP to the shocks in gross domestic product, gross fixed capital formation, employment, exports of goods and services and foreign direct investments.

Sensitivity ratio of gross domestic product to changes in gross fixed capital formation in Romania is 0.05 at the end of the fourth quarter and -0.04 after twentieth quarter, representing a relatively insignificant impact of this factor on growth dynamics in Romania. Much higher is the sensitivity ratio of gross domestic product to changes in employment and it equals 0.10 after the fourth quarter and 0.79 after the twentieth quarter. Moreover, similar is the elasticity of gross domestic product to changes of exports of goods and services and amounts to 0.24 after the fourth quarter and 0.63 after twentieth quarter. Relatively lower is the elasticity coefficient of gross domestic product to foreign direct investments in Romania and equals 0.19 after the fourth quarter and 0.36 after the twentieth quarter.

**Table 3** *Elasticity coefficients of gross domestic product to changes of gross fixed capital formation, employment, exports of goods and services, foreign direct investments in Romania*

The number of quarter after shock	GFCF	LAB	EXP	FDI
1	0,00	0,00	0,00	0,00
2	0,04	0,01	0,12	0,10
3	0,05	0,04	0,18	0,15
4	0,05	0,10	0,24	0,19
5	0,05	0,13	0,29	0,22
6	0,05	0,19	0,33	0,25
7	0,04	0,23	0,37	0,27
8	0,04	0,29	0,40	0,28
9	0,03	0,33	0,44	0,30
10	0,02	0,39	0,46	0,31
11	0,02	0,43	0,49	0,32
12	0,01	0,48	0,51	0,32
13	0,00	0,52	0,53	0,33
14	0,00	0,57	0,55	0,33
15	-0,01	0,61	0,57	0,34
16	-0,02	0,65	0,58	0,34
17	-0,02	0,69	0,59	0,35
18	-0,03	0,72	0,61	0,35
19	-0,04	0,76	0,62	0,35
20	-0,04	0,79	0,63	0,36

Source: Own calculations on the basis of *International Financial Statistics*, (2010).

On the basis of data presented in the above table, it can be concluded that the most important determining factor of gross domestic product in Romania during 2000-2009 is change of employment, while the smallest impact on gross domestic product during this period has the inflow of foreign direct investments.

Given shock occurrence is connected with each of the distribution chain links. However, only in the case of the first chain link, the original shock occurs and in subsequent links the shock results from the transmission of shocks in the former links. Hence, the shock occurring in subsequent chain links can be decomposed into an autonomous part (occurring in a given chain link) and the one transmitted from earlier links. Chain link decomposition is accomplished with the use of Cholesky decomposition matrix. Establishing the strength of the shock

transmission is indispensable to analyse foreign direct investments, as a factor for economic growth in a more detailed way.

Hence, the last stage of the analysis is the decomposition of the variance residual of subsequent factors which determines the dynamics of growth, in order to estimate the impact of these factors on the variability of the gross domestic product in Romania.

**Table 4** *The error variance decomposition in the economic growth equation [in %]*

The number of quarter after shock	GDP	GFCF	LAB	EXP	FDI
1	0,0	100,0	0,0	0,0	0,0
2	0,1	94,9	0,5	0,0	2,7
3	0,1	92,6	0,5	0,1	4,9
4	0,1	90,2	0,4	0,1	7,4
5	0,1	87,9	0,3	0,2	9,8
6	0,1	85,6	0,3	0,3	12,2
7	0,1	83,4	0,3	0,3	14,4
8	0,1	81,5	0,3	0,4	16,4
9	0,1	79,7	0,3	0,4	18,2
10	0,1	78,1	0,3	0,5	19,8
11	0,1	76,7	0,3	0,5	21,2
12	0,1	75,5	0,3	0,6	22,4
13	0,1	74,4	0,3	0,6	23,5
14	0,1	73,4	0,3	0,6	24,5
15	0,1	72,6	0,3	0,6	25,3
16	0,1	71,8	0,3	0,7	26,1
17	0,1	71,2	0,3	0,7	26,7
18	0,1	70,6	0,3	0,7	27,3
19	0,1	70,1	0,3	0,7	27,8
20	0,1	69,6	0,3	0,7	28,3

Source: Own calculations on the basis of *International Financial Statistics*, (2010).

On the basis of the data from the above Table, it can be noted that changes in the gross domestic product in Romania hardly explain GDP variance in the short-run as well as in the long-run. However, the effects of changes in employment and exports of goods and services on gross domestic product variance in the short- and long-run are similar. In the short- and long-run, only 0.3-0.7% of changes in gross domestic product in Romania can be accounted for by a change in employment and exports of goods and services. Much higher is the role of foreign direct investments in accounting for gross domestic product variances in the short- and long-run. In

the short-run, about 7.4% of GDP changes can be explained by changes in the foreign direct investments. This effect increases significantly as the time passed from the moment of change in this factor. In the long-run, the change in foreign direct investments accounts for 28.3% of GDP changes. The highest is the importance of gross fixed capital formation in explaining gross domestic product variances in the short- and long-runs, because more than 94% of GDP changes can be clarified by changes in gross fixed capital formation in the short-run and about 70% in the long-run.

### CONCLUDING REMARKS

On the basis of the analysis on the role of foreign direct investments in stimulating economic growth in Romania during 2000-2009, the relatively important linear relationship between the dynamics inflow of foreign direct investment and the dynamics of economic growth in Romania was confirmed. Furthermore, on the basis of VAR model estimations, we could affirm that the inflow of foreign direct investments was one of the key factors which substantially determined GDP in Romania during 2000-2009. On the other hand, it was also found that the largest impact on GDP growth in Romania during 2000-2009 has been on the employment changes. Therefore, the positive and significant influence of foreign direct investments on the dynamics of gross domestic product in Romania has been confirmed, but taking into account other determining factors, foreign direct investments were not the most significant cause of economic growth in Romania.

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## Appendix 1. Results of the parameter estimate of the VAR model

VAR system, lag order 1

OLS estimates, observations 1998:4-2009:2 (T = 43)

Log-likelihood = 319.76455

Determinant of covariance matrix = 2.3903768e-013

AIC = -13.4774

BIC = -12.2487

HQC = -13.0243

Portmanteau test: LB(10) = 240.457, df = 225 [0.2285]

## Equation 1: 1 GDP d11

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	0.393952	0.108116	3.6438	0.00082	***
l_GDP_d11_1	0.703196	0.153465	4.5821	0.00005	***
l_GFCF_d11_1	0.0564912	0.0786279	0.7185	0.47698	
d_d_1_EMP_d11_1	-0.0298571	0.0726595	-0.4109	0.68350	
l_EXP_d11_1	0.180284	0.0693466	2.5998	0.01332	**
d_1_FDI_d11_1	0.0995082	0.0743121	1.3391	0.18872	

Mean dependent var	6.594514	S.D. dependent var	0.746454
Sum squared resid	0.063383	S.E. of regression	0.041389
R-squared	0.997292	Adjusted R-squared	0.996926
F(5, 37)	2724.821	P-value(F)	2.10e-46
rho	-0.309660	Durbin-Watson	1.772768

F-tests of zero restrictions:

All lags of l\_GDP\_d11 F(1, 37) = 20.996 [0.0001]

All lags of l\_GFCF\_d11 F(1, 37) = 0.51619 [0.4770]

All lags of d\_d\_1\_EMP\_d11 F(1, 37) = 0.16885 [0.6835]

All lags of l\_EXP\_d11 F(1, 37) = 6.7587 [0.0133]

All lags of d\_1\_FDI\_d11 F(1, 37) = 1.7931 [0.1887]

## Equation 2: 1 GFCF d11

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	-0.0247613	0.315583	-0.0785	0.93788	
l_GDP_d11_1	0.321187	0.447953	0.7170	0.47787	
l_GFCF_d11_1	0.629047	0.229509	2.7408	0.00938	***
d_d_1_EMP_d11_1	-0.0701538	0.212088	-0.3308	0.74268	
l_EXP_d11_1	0.0889787	0.202418	0.4396	0.66280	
d_1_FDI_d11_1	0.097548	0.216911	0.4497	0.65554	

Mean dependent var	7.099016	S.D. dependent var	0.931532
Sum squared resid	0.540028	S.E. of regression	0.120811
R-squared	0.985183	Adjusted R-squared	0.983180
F(5, 37)	492.0135	P-value(F)	9.33e-33
rho	-0.427301	Durbin-Watson	1.876176

F-tests of zero restrictions:

All lags of l_GDP_d11	F(1, 37) = 0.51411 [0.4779]
All lags of l_GFCF_d11	F(1, 37) = 7.5122 [0.0094]
All lags of d_d_l_EMP_d11	F(1, 37) = 0.10941 [0.7427]
All lags of l_EXP_d11	F(1, 37) = 0.19323 [0.6628]
All lags of d_l_FDI_d11	F(1, 37) = 0.20224 [0.6555]

Equation 3: d d l EMP\_d11

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	0.0261932	0.198299	0.1321	0.89563	
l_GDP_d11_1	-0.0794836	0.281475	-0.2824	0.77922	
l_GFCF_d11_1	0.0232572	0.144214	0.1613	0.87276	
d_d_l_EMP_d11_1	-0.594365	0.133267	-4.4600	0.00007	***
l_EXP_d11_1	0.0493635	0.127191	0.3881	0.70016	
d_l_FDI_d11_1	0.0141509	0.136298	0.1038	0.91787	

Mean dependent var	-0.000481	S.D. dependent var	0.088384
Sum squared resid	0.213222	S.E. of regression	0.075913
R-squared	0.350117	Adjusted R-squared	0.262295
F(5, 37)	3.986667	P-value(F)	0.005416
rho	-0.115731	Durbin-Watson	2.230057

F-tests of zero restrictions:

All lags of l_GDP_d11	F(1, 37) = 0.07974 [0.7792]
All lags of l_GFCF_d11	F(1, 37) = 0.026008 [0.8728]
All lags of d_d_l_EMP_d11	F(1, 37) = 19.891 [0.0001]
All lags of l_EXP_d11	F(1, 37) = 0.15063 [0.7002]
All lags of d_l_FDI_d11	F(1, 37) = 0.010779 [0.9179]

Equation 4: l EXP\_d11

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	0.370955	0.12375	2.9976	0.00484	***
l_GDP_d11_1	0.239356	0.175657	1.3626	0.18123	
l_GFCF_d11_1	-0.0811464	0.089998	-0.9016	0.37308	
d_d_l_EMP_d11_1	-0.0173912	0.0831666	-0.2091	0.83551	
l_EXP_d11_1	0.805575	0.0793746	10.1490	<0.00001	***
d_l_FDI_d11_1	-0.0627659	0.0850581	-0.7379	0.46522	

Mean dependent var	6.716354	S.D. dependent var	0.774381
Sum squared resid	0.083039	S.E. of regression	0.047374
R-squared	0.996703	Adjusted R-squared	0.996257
F(5, 37)	2237.036	P-value(F)	8.00e-45
rho	0.309807	Durbin-Watson	1.368310

F-tests of zero restrictions:

All lags of l_GDP_d11	F(1, 37) = 1.8568 [0.1812]
All lags of l_GFCF_d11	F(1, 37) = 0.81297 [0.3731]
All lags of d_d_l_EMP_d11	F(1, 37) = 0.043728 [0.8355]
All lags of l_EXP_d11	F(1, 37) = 103 [0.0000]
All lags of d_l_FDI_d11	F(1, 37) = 0.54452 [0.4652]

Equation 5: d\_l\_FDI\_d11

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	-0.444225	0.20664	-2.1497	0.03818	**
l_GDP_d11_1	1.02878	0.293315	3.5074	0.00121	***
l_GFCF_d11_1	-0.440988	0.15028	-2.9344	0.00571	***
d_d_l_EMP_d11_1	0.059623	0.138873	0.4293	0.67017	
l_EXP_d11_1	-0.466509	0.132541	-3.5197	0.00116	***
d_l_FDI_d11_1	-0.0471735	0.142031	-0.3321	0.74166	

Mean dependent var	0.074086	S.D. dependent var	0.086984
Sum squared resid	0.231537	S.E. of regression	0.079106
R-squared	0.271390	Adjusted R-squared	0.172929
F(5, 37)	2.756323	P-value(F)	0.032531
rho	0.055263	Durbin-Watson	1.792404

F-tests of zero restrictions:

All lags of l_GDP_d11	F(1, 37) = 12.302 [0.0012]
All lags of l_GFCF_d11	F(1, 37) = 8.6109 [0.0057]
All lags of d_d_l_EMP_d11	F(1, 37) = 0.18433 [0.6702]
All lags of l_EXP_d11	F(1, 37) = 12.389 [0.0012]
All lags of d_l_FDI_d11	F(1, 37) = 0.11031 [0.7417]

## Appendix 2. Empirical studies of FDI and economic growth

Study	Type of data	Countries and time period	Empirical approach	Assumptions	Result
Balasubramanyam et al (1996)	Cross section	46 developing countries 1970-1985	OLS regressions	FDI effects from technology spillovers, stronger effects for export promoting than import substituting economies	FDI has a positive effect but only for export promoting host countries
Borensztein et al (1998)	Cross section	69 developing countries 1970-1989	Regression estimations using SUR technique	FDI effects through technology diffusion	FDI has a positive effect on growth but magnitude depends on availability of host country human capital
Olofsdotter (1998)	Cross section	50 developed and developing countries 1980-1990	OLS regressions	FDI effects through technology spillovers	Increase in inward FDI stock has a positive effect on the growth rate
De Mello (1999)	Panel data and time series	32 developed and developing countries 1970-1990	Stationarity tests	FDI effects from technology and improved management and organisation	Only weak evidence for FDI effects on economic growth.
Zhang (2001)	Time series	11 developing countries in East Asia and Latin America, varying time periods between 1957-1997	Analysis of causality between FDI and economic growth using Granger causality tests	There can be feedback effects from economic growth to FDI inflows	Evidence of growth enhancement from FDI, magnitude depends on host country conditions
Carkovic and Levine (2002)	Cross-section and panel data	72 developed and developing countries 1960-1995	Regression analysis using OLS as well as GMM	Earlier macroeconomic studies suggest a positive role for FDI in generating economic growth	FDI inflows do not exert a robust, independent influence on economic growth
Choe (2003)	Panel data	80 developed and developing countries, 1971-1995	Analysis of causality between FDI and economic growth using Granger causality tests	Rapid economic growth might lead to high FDI inflows	FDI Granger causes economic growth and vice versa but the effects are more apparent from growth to FDI
Bengoa and Sanchez-Robles (2003)	Panel data	18 Latin American countries 1970-1999	Regression analysis, comparing fixed and random effects	FDI effects from technology spillovers	FDI has a positive effect on economic growth, magnitude depends on host country conditions

Source: Johnson: 2006





## THE ROLE OF LATIN AMERICAN BANKS IN THE REGION'S CURRENCY CRISES

Carroll Howard GRIFFIN\*

***Abstract:** The frequency of currency crises in Latin America has not abated in the last few years, as the Mexican Peso crises of 1982 and 1995, the Brazilian Real Crisis of 1998 and the Argentine Peso crisis of 2001 attest. Although many factors are involved in these crises, Latin American banks have played an important, yet previously unstudied role in the frequency and severity of the region's financial crises. This paper examines four of the most recent currency crises in the region to determine if there are any commonalities or root causes to be found in the region's banking system. It is found that, indeed, the region's banks have had a profound role.*

***Keywords:** Currency crises, Latin America, Banking*

***JEL Codes:** Banks, International Financial Markets*

### 1. INTRODUCTION

Throughout the last few decades, several waves of currency crises have swept through Latin America, provoking very serious financial damage after each. These currency crises have been of two general sorts—those that originated in the region and spread to neighboring countries and those that originated outside the region but through a “domino effect” eventually affected Latin America. Historically, financial crises in Latin America have been more frequent and severe than in other regions (Kaminsky and Reinhart, 1998).

This study examines the recent history of Latin America's currency crisis to determine if there is a relationship between the region's banking system and the

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prevalence of currency crises over the last 25 years. It will examine the circumstances and economic stability of each country in question over this time period. The study will examine time series data to gain a “bird’s eye view” of the trends during the last 25 years. It will then analyze International Monetary Fund data on commercial bank and non-bank financial institution assets and liabilities as well as central bank foreign reserves and what impact these factors have had on each respective country’s exchange rate during the time in question.

## **2. LATIN AMERICA’S CURRENCY CRISES – A BRIEF HISTORY**

Several Latin American countries have experienced simultaneous currency and banking crises, such as Chile (1982), Argentina (1982 and 1995), Venezuela (1994) and Mexico (1994-95). Causation may run in either direction, as the two can many times be complementary (Miller, 1998). Research has shown that the “domino effect” in the payment system depends on the pattern of interbank linkages. If a bank is having trouble honoring some of its obligations, it may have to sell off some of its assets. However, not all assets are liquid enough to insure that the obligations are met in a timely manner (Tannuri-Pianto, 2006). Also, according to Miller (1996), a speculative attack on the currency can precipitate a banking crisis if deposit money is used to speculate on the currency and banks are depleted of funds.

According to Obstfeld (1994), a weak banking sector may itself cause a currency crisis if rational speculators anticipate that policymakers will not endure the costs of defending their currency. Calvo (1995) showed that an internal drain (i.e. a bank run) can cause an external drain (i.e. a speculative attack on a currency) if the increased liquidity resulting from a government bailout is inconsistent with the fixed parity. Rojas-Suarez and Weisbond (1995) also discuss how a currency crisis can cause hardship for a weak banking sector if the government defends its currency and increases interest rates. Hattori concurs in that a country’s central bank has two means of defending their currency when its value comes under attack—they can either use foreign exchange reserves or they can raise domestic interest rates (2002).

The following is a brief synopsis of each examined country’s circumstances and repercussions surrounding its devaluation in the given year.

### **2.1. Mexico – 1982**

In August 1982, Mexico defaulted on its external bank debt. By the end of that year, the peso had depreciated 100 percent. Prior to Mexico's default, several Latin American countries had already experienced currency crises, banking crises or both. When Mexico defaulted, the highly leveraged foreign banks pulled back from emerging markets in general and Latin America in particular (Kaminsky et al, 2003).

### **2.2. Mexico – 1994/95**

The Mexican peso came under attack in December 1994. After several attempts at defending it by the Mexican Central Bank, the currency was left to float freely in January 1995. Speculative attacks on other Latin American countries immediately ensued. The most severely affected countries in the region were Argentina, Brazil, Peru and Venezuela. Interestingly, Chile was a notable exception (Glick and Rose, 1998). According to Fratzcher, the Mexican peso crisis of 1994/95 spread across emerging markets not only due to weaknesses in economic fundamentals, but also due to a high degree of financial interdependence among the affected economies (2003).

### **2.3. Brazil – 1998/99**

The devaluation of the Thai baht on July 2, 1997, generated waves of turbulence in currency and equity markets that surpassed the "tequila" effects in the midst of the 1994 devaluation of the Mexican peso. The crisis first spread through East Asia in the form of a string of devaluations and stock market collapses. As the problems intensified, the currencies of other Asian countries, including Hong Kong and South Korea, came under speculative pressure. As a result of a possible "domino" effect, countries outside the region such as Argentina, Brazil, and Russia suffered sharp declines in their equity markets and periodic bouts of speculation against their currencies (Kaminsky and Reinhart, 1999).

The fall of the Hong Kong stock market in late 1997 affected several Latin American markets, with Brazil being perhaps the hardest hit. Specifically, the Brazilian currency, the Real, came under speculative pressure and its Central Bank's international reserves subsequently declined by about \$9 billion. On January 13, 1999, the Brazilian Real was devalued and several weeks later left to float freely, eventually losing 70 percent of its value (Kaminsky et al, 2003).

Also, during the height of the Asian boom in the 1990s, South Korean banks had extended credit to several governments, with Brazil being one of them. Brazilian banks had also invested in Russian short-term treasury securities. When the Asian crisis hit, Korea was affected. The contagion effect spread from that country to Brazil and Russia, thus demonstrating how financial linkages can lead to contagion during times of financial crisis (Khalid and Rajaguru, 2005).

#### **2.4. Argentina – 2001**

The Argentine crisis differs from the others in question because the Argentine government in the early 1990s adopted a currency board which set the peso on a one-to-one parity with the U.S. dollar. However, in times of crisis, Argentine investors may have tried to escape their system by developing strong relationships with other currencies. Therefore, there may have been a low dependence between the peso and its neighbor currencies except for in times of crisis (Fukuhara, 2003). When the Brazilian Real was devalued in January 1999, this left the Argentine peso overvalued in comparison. In December 2001, the president announced the country's intentions to devalue its currency, thereby abandoning the peg it had sustained for almost a decade (Kaminsky et al, 2003).

Although the domestic economy had been severely affected, the Argentine crisis was notable for the lack of substantial spillover into other emerging market economies, particularly when compared with other crises from the previous decade. This perhaps can be due to a relative lack of direct trade linkages with any emerging markets' economy except Brazil. Also, widespread anticipation of the crisis may have also limited the spillover into other economies (Hall and Taylor, 2002).

### **3. THE BANKING SECTOR AND CRISES**

Small events at times have large consequences due to chain reactions and cumulative forces. It happens that a liquidity crisis in a unit fractional reserve banking system is precisely the kind of event that can trigger—and often has triggered—a chain reaction. And economic collapse often has the character of a cumulative process. Let it go beyond a certain point, and it will tend for a time to gain strength from its own development as its effects spread and return to intensify the process of collapse (1963).

According to Fratzcher (2003), there are three general causes of currency crisis- contagion, weak economic fundamentals, and shifts in agents' beliefs (which can lead to "herd" behavior). Additionally, it is thought that there are several "generations" of models which attempt to explain contagion. The first generation, led by Krugman, emphasizes unsustainable economic policies and structural imbalances. The second generation, led by Obstfeld, emphasizes self-fulfilling expectations and multiple equilibria (Pesenti and Tille, 2000).

After using trade competition, bank loans and the degree of stock market integration as proxies, Fratzcher finds that financial interdependence is a key cause of past financial crises (2003). Also, political forces can lead to currency crises. Political forces can initially be behind the decision to devalue as well as leading to an increase in speculative pressures on the country in question if one or more of its neighbors chooses to devalue (Drazen, 1998). According to Krugman, "a government-no longer a simple mechanism like that in the classical model, but rather an agent trying to minimize a loss function- must decide whether or not to defend an exogenously specified exchange rate parity" (1996).

The literature has emphasized two separate channels through which a crisis may be spread through the financial sector across markets — (a) by the refusal of banks to roll over loans or provide new funds, and (b) by the decision of investors to withdraw portfolio investments. Additionally, a crisis is more likely to spread across countries that have a common lender (Fratzcher, 2003). According to Pesenti and Tille, several recent studies have emerged which argue that currency and banking crises intensify one another, leading to a vicious downward spiral. A currency crisis has an adverse effect on the banking sector when the banks' liabilities are denominated in a foreign currency. Currency devaluation suddenly magnifies the amount of liabilities outstanding in the domestic currency (2000).

Expressed another way, the likelihood of a currency crisis is heavily dependent on the health of a given country's banking sector (Pesanti and Tille, 2000). A corollary to this line of thought is that if banks believe there is a government safety net or a bailout plan, they are more likely to engage in risky behavior while investors will be more likely to continue lending.

#### **4. The Possible Role of Latin American Banks**

There were four major international financial crises during the 1990s- Mexico in 1995, East Asia in 1997-98, Russia in 1998, and Brazil in 1998-99. All of these crises seem to have certain elements in common. First, after a period of

substantial capital inflows, both domestic and foreign investors decided to reduce the amount of their assets in the particular country in response to a change in its fundamentals (real or perceived). Second, after this process went on for some time in these emerging market countries, investors shifted their focus from evaluating the situation in each country to evaluating the behavior of other investors, thus creating a “bank run” mentality. Third, the withdrawal of capital and the associated sudden decline in the exchange rate magnified fundamental weakness, in turn intensifying the financial market response. Lastly, the increased domestic value of the foreign currency liabilities of domestic borrowers further degraded an already weakened financial system, in turn causing further reductions in lending and worsening of the fundamentals (Summers, 2000).

According to Kaminsky and Reinhart (1998), financial crises occur as an economy enters into a recession that follows from a boom in economic activity fueled by the creation of credit and rapid increases in capital inflows. The cycle of overlending can be exacerbated by deposit guarantees (either implicit or explicit), poor banking supervision and moral-hazard problems accompanied by a currency overvaluation and weakening exports. Also, according to Summers, when well-capitalized and supervised banks, effective corporate governance and other elements of a strong financial system are in place, significant amounts of debt will be tolerable. However, when these elements are missing, even small amounts of debt can potentially lead to financial crises (2000). According to Buch and Heinrich, the impact of a currency devaluation on the net worth of commercial banks with a vulnerable foreign exchange position can accelerate a crisis of this sort. Such a negative shock could be the result of an increase in non-performing loans of commercial banks or the removal of a government guarantee to bail out distressed commercial banks (1999).

In a fashion similar to the Asian crisis of 1997, the Mexican currency crisis of 1995 was preceded by a loss in profitability of the banking system and by an increase in non-performing loans. Commercial banks’ net worth was affected negatively by the peso depreciation and sharply increased the value of foreign liabilities of commercial banks. Many banks, for a variety of reasons, were not hedged against exchange rate risk and immediately became dangerously overleveraged (Buch and Heinrich, 1999). According to Peltonen, emerging markets with more rigid exchange rate regimes were less likely to experience currency crisis during the last two decades (2006). Mexico’s currency crisis of

1994 was the first serious test of Argentina's currency board and its commitment to maintain its parity with the U.S. dollar (Goldberg and Veitch, 2002). Although the Argentine peg stood firm throughout most of the 1990s, it, too, was not invincible.

#### 4. HYPOTHESES

Based on the above literature review, the hypotheses are the following:

*H1- There is an inverse relationship between the region's bank and non-bank financial institution assets and the number of currency units per dollar (i.e. the exchange rate vs. the U.S. dollar). In other words, the more assets bank and financial institutions possess, the stronger the exchange rate vs. the dollar.*

*H2- There is an inverse relationship between central bank foreign reserves and the number of currency units per dollar (i.e. the exchange rate vs. the U.S. dollar). In other words, the more foreign reserves a central bank possesses, the stronger the exchange rate vs. the dollar.*

*H3- There is a positive relationship between commercial banks' liabilities and the number of currency units per dollar (i.e. the exchange rate vs. the U.S. dollar). In other words, the more liabilities held by commercial banks, the weaker the exchange rate vs. the dollar.*

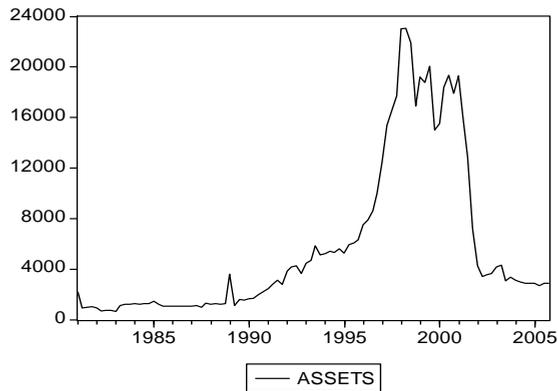
#### 5. METHODOLOGY

The following variables will be used as indicators of to what extent Latin America's banks have contributed to the region's currency crisis: commercial bank assets, commercial bank liabilities, foreign reserves, and non-bank financial institution assets. These variables have been the most frequently cited by the literature as being key in banking and/or currency crises. First, time series analysis will be employed, charting the above five variables across time and examining to what extent each variable responded to the currency crisis in the respective country. This is to gain an overall understanding and a macro view of the long term trends of each of the above variables. Second, a series of OLS regressions will be run using International Monetary Fund data with combinations of the above variables as the independent variables with the foreign exchange rate as the dependent variable. This is in an attempt to statistically quantify the significance of each independent variable on the foreign exchange rate.

## 6. DATA

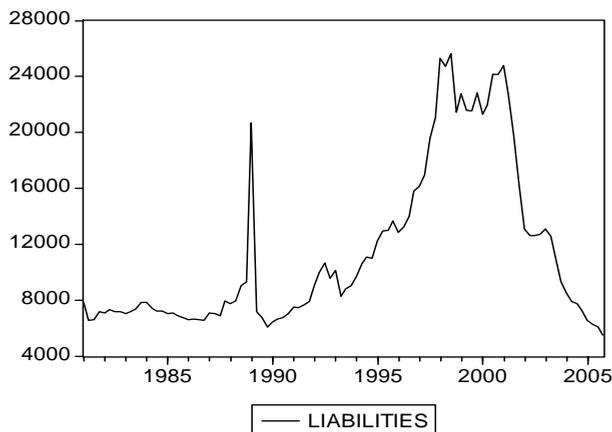
### 6.1. Time Series Analysis

#### 6.1.a. Argentina



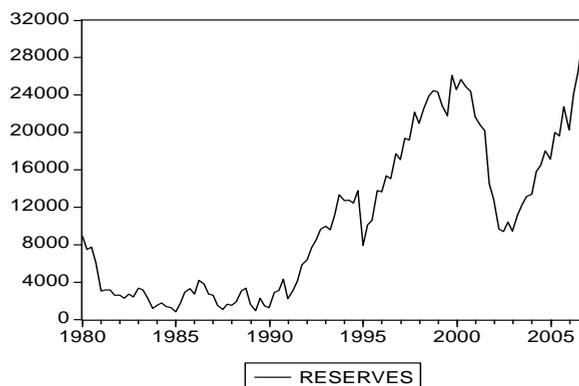
**Figure 3** Argentine Commercial Banks- Assets (Millions US\$)

As can be seen, during the 1990s, commercial bank assets increased dramatically, only to erode quickly after the peso devaluation sparked the currency crisis in late 2001-early 2002. Depositors rushed to withdrawal money and soon afterward the government imposed withdrawal restrictions in an attempt to lessen the run on banks.



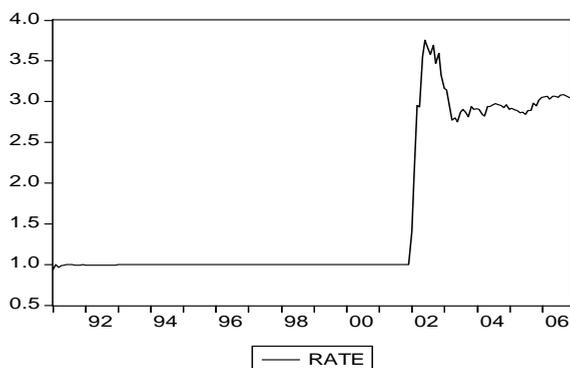
**Figure 4** Argentine Commercial Bank Liabilities (Millions US\$)

Although bank liabilities grew tremendously throughout the 1990s, they quickly decreased after the currency crisis. The rationale behind this remains unclear; however, it could possibly be due to this country's declared debt moratorium.



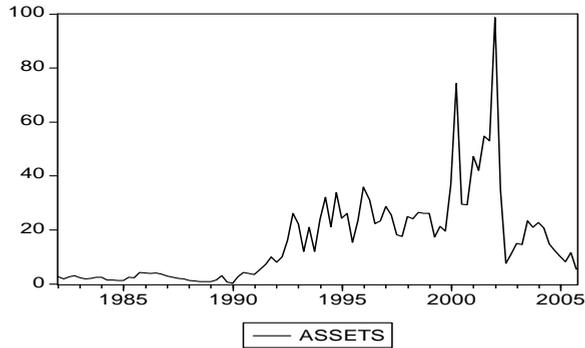
**Figure 5** Argentine Foreign Reserves (Millions US\$)

When the peso was in flux during late 2001 (coming off a one-to-one parity with the U.S. dollar), the government attempted to defend it. However, this was quickly abandoned as foreign reserves began to be depleted.



**Figure 6** Argentine Foreign Exchange Rate (Units per US\$)

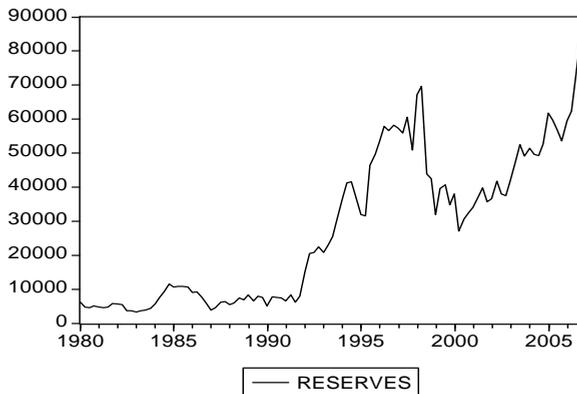
The peso-dollar exchange rate had been at a one-to-one parity throughout the 1990s. However, this was deemed no longer viable, and it was allowed to float. The peso quickly sunk to approximately 3.5 per dollar before recovering slightly.



**Figure 7** Argentine Non-Bank Financial Institutions- Assets (Millions US\$)

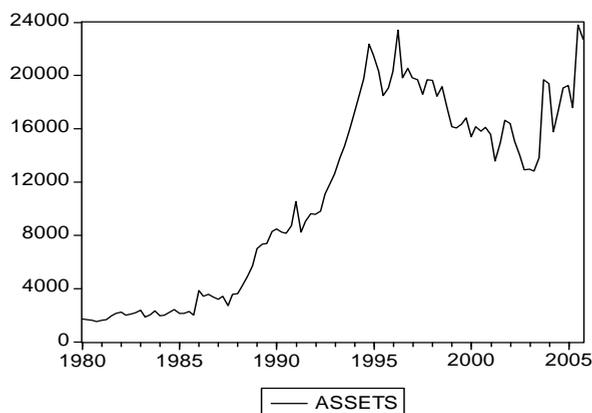
Like that of banks, non-bank financial institutions had experienced increases in assets throughout the 1990s, only to find them quickly vanishing immediately after the peso was allowed to float in late 2001. It is evident that the average Argentine citizen lost faith in the banking and financial system, preferring to hold onto funds rather than entrust it to the country's financial system.

#### 6.1.b. Brazil



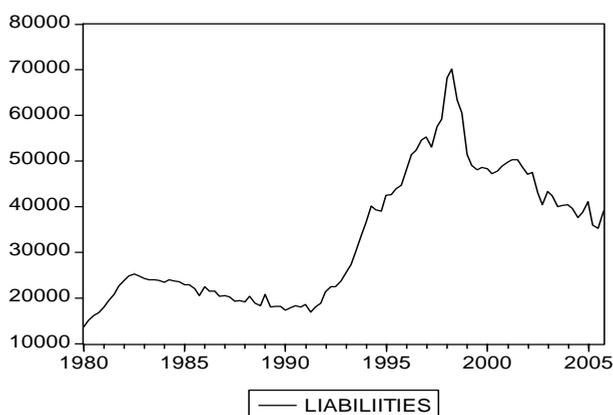
**Figure 8** Brazilian Foreign Reserves (Millions US\$)

Brazil, after implementing the Real Plan in July 1994, experienced a strengthening of its macroeconomic fundamentals and a stabilization of its exchange rate. As a result, foreign reserves began to steadily climb. However, they experienced a sharp decline in late 1997 and into 1998 as the Asian crisis swept through other developing regions of the world.



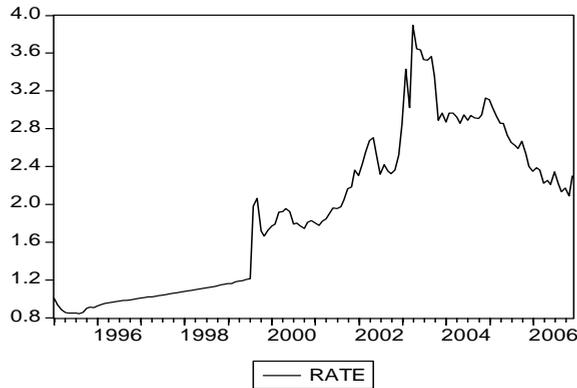
**Figure 9** *Brazilian Commercial Bank Assets (Millions US\$)*

Brazil's commercial bank assets also steadily increased from the mid-to-late 1980s (Brazil returned to a civilian form of government in 1985 after having been run by the military for many years) onward throughout most of the 1990s before losing ground again as a result of the Asian currency crisis.



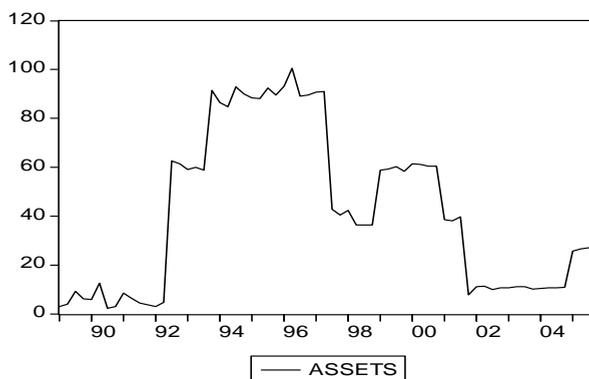
**Figure 10** *Brazilian Bank Liabilities (Millions US\$)*

As can be seen here, Brazilian bank liabilities were increasing as assets were decreasing during the crisis period of the late 1990s. This quickly strained the ability of this country's banks to remain solvent.



**Figure 11** *Brazilian Foreign Exchange Rate (Units per US\$)*

After years of hyperinflation, Brazil implemented the Real Plan in mid-1994 and immediately saw an improvement in monetary stability. The Plan began with a new currency, the Real, and pegged it one-to-one against the dollar. Although the Real gradually lost value versus the dollar over the next few years, it provided a level of stability the Brazilians had not known for a long time. However, in 1997 and 1998 the Brazilian government found that it could no longer support the Real at its then current levels and decided to let it float. It immediately sunk and remained very unstable over the next few years, again losing ground as the Argentine peso crisis occurred in 2001 and 2002.

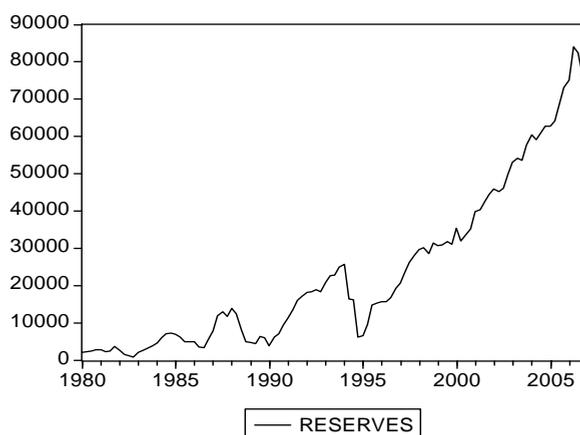


**Figure 12** *Brazilian Non-Bank Financial Institutions- Assets (Millions US\$)*

This time series chart again confirms what the previous charts demonstrate; namely, the non-bank financial institutions benefited greatly from the Real Plan.

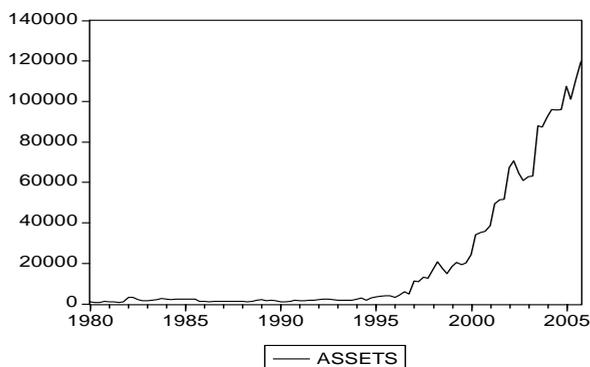
The general macroeconomic stabilization occurred throughout most of the 1990s, only to lose ground once again during the Asian crisis and then the Argentine crisis.

### *6.1.c. Mexico*



**Figure 13** Mexican Foreign Reserves (Millions US\$)

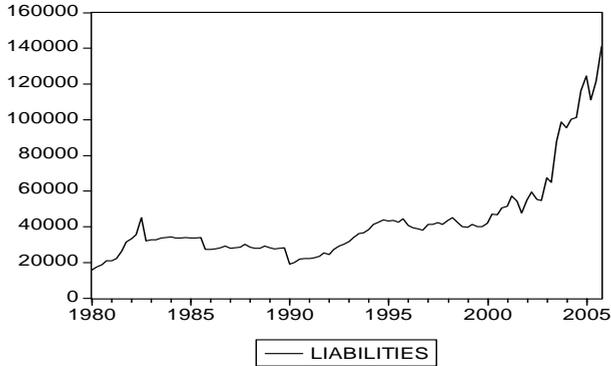
Mexico has seen its foreign reserves climb steadily throughout the last 10-12 years. Although reserves did suffer as a result of the 1994-95 peso crisis, they quickly bounced back and surpassed prior levels.



**Figure 14** Mexican Commercial Bank Assets (Millions US\$)

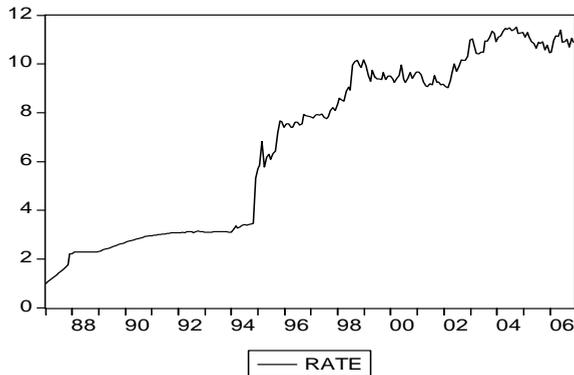
Commercial bank assets strengthened tremendously since the mid-1990s, mirroring what the economy as a whole has done. Mexico was able to “shrug off” the crisis of 1994-95; after a short recession, the government made use of

international emergency fund packages in order to help stave off further economic damage, the country has done relatively well.



**Figure 15** *Mexican Commercial Bank Liabilities (Millions of US\$)*

Commercial bank liabilities rose throughout the early to mid-1990s, leveling off after the peso crisis of 1994-95. However, since approximately 2001, liabilities have risen tremendously. This could portend future danger for this country's banking system.



**Figure 16** *Mexican Foreign Exchange Rate (Units per US\$)*

The currency had been fairly stable for the previous 5-8 years before the crisis, hovering within a fairly small band. However, in December 1994 the government announced that it would allow the currency to float, and its value immediately plummeted. It continued to lose value for several years before eventually stabilizing in 1998. It has traded fairly consistently since that time.

## 6.2. Ordinary Least Squares

The following results were found for Argentina, Brazil and Mexico using OLS regression analysis. The following parameters were used:

Y = exchange rate

X = 1- commercial bank assets, 2- non-bank financial institution assets, 3- foreign reserves and 4- commercial bank liabilities.

**Table 5** OLS Results

	<b>Argentina</b>	<b>Brazil</b>	<b>Mexico</b>
Adjusted R <sup>2</sup>	0.574	0.836	0.796
t-stat (X1)	-5.46	-2.65	-4.91
t-stat (X2)	-3.37	-11.4	unavailable
t-stat (X3)	6.67	-0.57	20.48
t-stat (X4)	3.1	-4.05	5.64

From the above table it is evident that all four independent variables (with the exception of Mexico, which had only three) have a strong link to the respective country's exchange rate. Almost all t-stats are significant and high R<sup>2</sup> figures are present in all cases. The following inferences can be made:

- (a) There is a strong (statistically significant at the 1 percent level) inverse relation between commercial bank assets and the indirect exchange rate (i.e. number of currency units per dollar) in all three countries.
- (b) There is a strong (statistically significant at the 1 percent level) inverse relationship between non-bank financial institution assets and the indirect exchange rate (i.e. number of currency units per dollar) for the two countries for which data was available.
- (c) There is an inverse relationship (not statistically significant) between foreign reserves and the exchange rate in one of the three countries.
- (d) There is a strong (statistically significant at the 1 percent level) positive relationship between commercial bank liabilities and the indirect exchange rate (i.e. number of currency units per dollar) in two of the three countries.

Thus, through the OLS analysis of the above three countries, Hypothesis 1 is fully supported (see inferences (a) and (b) above) and there is partial support for Hypothesis 3. Hypothesis 2 (the relationship between foreign reserves and the exchange rate) receives very little support.

## 7. CONCLUSION

The role of Latin America's banks in the region's currency crisis has been profound. Weak economic fundamentals, along with weaknesses in the banking sector, have in part led to repeated currency crises in the region over the last 20 or more years. In order to "turn the tide" of economic performance in the region, it is imperative that banks strengthen their fundamentals. From the above time series and OLS tests, it is clear that bank and non-bank commercial assets as well as commercial bank liabilities have a profound influence on the respective country's exchange rate versus the U.S. dollar. It is in the region's best interest to maintain a healthy banking sector in order to fend off any future attacks, which can be devastating to the country and its citizens.

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## ARE REVEALED INTENTIONS POSSIBLE? <sup>1</sup>

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***Abstract:** This paper asks whether it is possible to design an Intentions Revealing Experiment – that is, an experiment in which the early moves of the decision maker in a dynamic decision problem reveal the intentions of that decision maker regarding later moves in the decision problem. If such a type of experiment is possible, then it will enable economists to test whether individuals have plans and implement them – a basic assumption of all economic theories of dynamic decision making. Unfortunately the main finding of the paper is in the form of two Impossibility Theorems which show that, unless one is prepared to make certain assumptions, such an Intentions Revealing Experiment is impossible. However, the paper does have a positive side – it describes the type of assumptions that one needs to make in order to make an Intentions Revealing Experiment possible.*

***Keywords:** dynamic decision making, experiments, planning, dynamic consistency.*

***JEL codes:** D81, C91, D90*

### INTRODUCTION

Is it possible to design an experiment in which early decisions by the participants reveal the intentions or plans of those individuals with respect to later decisions? To answer this question is the purpose of this paper.

We should start with some motivation as to why the answer to this question is of interest. This motivation comes from all economic theories of

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<sup>1</sup> I wish to thank the European Community under its TMR Programme Savings and Pensions (TMR Network Contract number ERB FMR XCT 96 0016 (“Structural Analysis of Household Savings and Wealth Positions over the Life Cycle”)) for stimulating the research reported in this paper.

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dynamic decision making, in which the economic agent is envisaged, firstly, as having a plan as to what he or she will do later in the decision problem, and secondly, as using this plan to determine the earlier decisions. This follows from the structure of economic models of dynamic decision making. Virtually all such economic theories of dynamic decision making involve two components: a procedure for reducing, either in one move or several, a dynamic decision problem to one or several static decision problems; and a preference functional for determining optimal choice in static decision problems.

There are three main alternative procedures for reducing a dynamic decision problem to a (series of) static decision problem(s): (1) converting the dynamic decision problem into a *strategy* choice problem (where a strategy is a set of conditional decisions as to what to do at each decision node, conditional on having arrived at that node); (2) using *backward induction with reduction* to eliminate choices that will not be taken in the future and then using the principle of the reduction of compound lotteries to simplify the remaining portion of the decision tree; (3) using *backward induction with certainty equivalents* to eliminate choices that will not be taken in the future and using certainty equivalents to replace the eliminated part of the decision tree with a certainty equivalent. Each of these three procedures involves a plan – a set of conditional decisions at each node, conditional on having arrived there. Procedure (1) does this explicitly; procedures (2) and (3) implicitly.

There are many preference functionals in economic theory that attempt to describe optimal decision making in *static* decision problems. The most popular is Expected Utility theory but there are many alternatives and generalisations. Any of these preference functionals can be combined with any of the three procedures (for reducing a dynamic decision problem to a (series of) static decision problem(s)) described above. In general, the three different procedures will generate different plans for tackling any given dynamic decision problem, though in the case of Expected Utility theory this is not so: whichever procedure is used, the plan produced is the same. Many economists regard this as a great normative strength of Expected Utility theory.

If an individual's preference functional is not that of Expected Utility theory, it is possible (though not inevitable) that different procedures (for reducing a dynamic decision problem to a (series of) static decision problem(s)) will result

in different plans. Because of this, it is possible that a non-Expected-Utility-theory decision maker (henceforth non-EU person) will be dynamically inconsistent – that is, they will want to do something different from their original plan at some point in the decision tree.

There are two ways that a non-EU person can resolve this problem of potential dynamic inconsistency: that of ‘resolution’ and that of ‘sophistication’. The first of these terms was coined by McClennen (1990) and describes the behaviour of an individual who chooses the *ex ante* optimal strategy (out of the set of all possible strategies) and who resolutely implements it without deviation (perhaps he or she leaves instructions with his or her lawyer and then goes away on holiday). The second of these terms (perhaps attributable to Machina (1989)) describes the behaviour of an individual who works by backward induction (either with reduction or with certainty equivalents) and therefore never places him- or her-self in a position of wanting to change his or her mind – change the plan.

Non-EU people who are neither resolute nor sophisticated are described by O’Donoghue and Rabin (1999) as ‘naïve’ – they will typically do something different in the future than they had earlier planned to do. Most economists would describe this kind of behaviour (time inconsistency) as irrational – particularly as the non-EU people who do this kind of thing know in advance that they will do it – and yet disregard this fact. Yet casual empiricism would suggest that such behaviour is not unusual: there seem to be people who either do not have a plan or who have a plan and do not implement it. We are interested to learn whether in fact this is the case.

So the brief is simple: to ascertain whether individuals make plans and whether they implement them. But the execution of the brief is far from simple – as it is difficult to observe whether people have plans and what those plans are. First, there is a methodological problem in that mentioning the word ‘plan’ to individuals may well affect their behaviour. We want to avoid this problem. Secondly, even if we did not, there would be problems in motivating the response of subjects. Suppose, for the moment that individuals do have plans, how do we ask them what those plans are in a way that gives them an incentive to accurately reveal them? If we simply ask them, there is a problem – how do we know whether the reply has any meaning? If, to make their reply to have meaning, we *force* them then to implement whatever plan they have announced, then we have not only *forced them*

to have a plan but we have also forced them to implement it. Which rather spoils the whole purpose of the exercise! We are very sceptical about the value of asking for people's plans: first, because the question itself suggests to individuals that they *ought* to have a plan; secondly, there is no way that we can guarantee that what they say is their plan actually is their plan.

Instead, we have the following suggestion: can we design an experiment in such a way that the earlier decisions of individuals reveal their future intentions? If we can, then we can answer the combination of the two questions above: do individuals have plans and implement them? While we may not have answers to each question individually, it is the answer to the combination that is important to economic theorists and practitioners.

### EXPERIMENTAL DESIGN

We deliberately work with a simple structure – in fact the simplest possible structure for a genuinely dynamic decision problem under risk – a two decision-nodes, two chance-nodes decision problem – as portrayed in Figure 17. Square boxes represent decision nodes and round boxes chance nodes. To make the analysis as simple as possible we restrict the number of decisions at each decision node to *two* - Up or Down, and we restrict the number of possibilities at each chance node to *two* – Up or Down. We also, rather arbitrarily at this point assume that each of these two possibilities are equally likely – so that the probability of moving Up at a chance node and the probability of moving Down are both 0.5.

The tree in Figure 17 1 starts with a decision – whether to move Up or Down at node  $S$ . Then follows a chance node – either  $C_1$  or  $C_2$  depending upon the decision taken at  $S$ . Then there is a second decision node – either  $D_1$ ,  $D_2$ ,  $D_3$  or  $D_4$  depending on the previous moves by the decision maker and by Nature. There are then choice nodes, labelled  $A$  through  $H$ , and finally there is a payoff, one of the set  $P = \{a_1, a_2, b_1, b_2, c_1, c_2, d_1, d_2, e_1, e_2, f_1, f_2, g_1, g_2, h_1, h_2\}$ . For simplicity in what follows, we will number the payoffs in such a way that  $x_1$  is at least as large as  $x_2$  for all  $x$  in the set  $a$  through  $h$ . The participant in the experiment will end up paid one of the payoffs out of this set  $P$  – the precise payoff depending upon his or her decisions and upon the moves by Nature. The question is: can we choose the elements of the set  $P$  in such a way that the move by the individual at the first

decision node,  $S$ , reveals his or her plan as to what he or she will do at (the relevant ones of) the decision nodes  $D_1$ ,  $D_2$ ,  $D_3$  or  $D_4$ ?

Obviously how we order the elements of the set is unimportant, so let us be more precise. Let us ask: can we choose the elements of the set  $P$  in such a way that a decision to move Up at the first choice node ( $S$ ) reveals the intention to move Up at whichever of  $D_1$  or  $D_2$  is actually reached, while a decision to move Down at the first choice node ( $S$ ) reveals the intention to move Down at whichever of  $D_3$  or  $D_4$  is actually reached? We should add to this that we want the experiment to be non-trivial and, in particular, not driven by (first-order) dominance – so that all rational subjects all take the same decisions. (Perhaps an extended note is needed at this stage: some of my colleagues have argued that it is of interest to construct a tree where two strategies (one involving Up at the first node and the second involving Down at the first node) dominate all the others, and therefore in which violation of the revealed intentions reveals a violation of dominance. The response is that we are testing to see whether plans are made and implemented. It may be the case that plans are not made and implemented because dominance is violated – but I do not want an experiment in which that is the *only* reason why plans are not made and implemented.) Moreover we want the decision problem to be a genuinely dynamic one so we need that at least one of ( $A$  and  $B$ ), ( $C$  and  $D$ ), ( $E$  and  $F$ ) and ( $G$  and  $H$ ) are different – otherwise the second decision would not be a genuine decision. Similarly we need that either ( $A$  and  $B$ ) are different from ( $C$  and  $D$ ) or that ( $E$  and  $F$ ) are different from ( $G$  and  $H$ ) – for otherwise the first chance node would not be a genuine chance node. More crucially we do not want the decisions at any node to be driven purely by dominance. In particular we do not want the decisions at the second decision node to be driven purely by dominance. So, for at least one of the pairs ( $A$  and  $B$ ), ( $C$  and  $D$ ), ( $E$  and  $F$ ) and ( $G$  and  $H$ ) it must be the case that neither member of the pair dominates the other member of the pair. Dominance in this two-outcome case is clear – for example if  $a_1$  is at least as large as  $b_1$  and  $a_2$  is at least as large as  $b_2$  then  $A$  dominates  $B$ .

As we will see, the answer to our question depends very much on what we can assume about subjects. We consider various cases, becoming more and more restrictive as we proceed. Before we start, it might be useful to propose a definition of what it is that we are after. This is an *Intentions Revealing Experiment* – defined as an experiment in which some subjects move Up at the first node and some move

Down at the first node, and in which the decision to move Up at the first decision node reveals the intention (for someone who makes plans) to move Up at the second decision node (independently of what Nature does at the first chance node) and in which the decision to move Down at the first decision node reveals the intention (for someone who makes plans) to move Down at the second decision node (independently of what Nature does at the first chance node). In such an *Intentions Revealing Experiment* a decision to move Up at the first decision node and Down at the second, or a decision to move Down at the first and Up at the second, must be a decision by someone who either does not have a plan, or who has a plan but fails to implement it. In other words, such a pattern of decisions reveals a dynamically inconsistent individual.

Before concluding this section let us introduce some notation. A *strategy* is a decision at the first decision node and a decision at both of the possible second decision nodes – depending upon which decision node Nature moves to. We denote a strategy in the following form:  $\{X, YZ\}$  – where each of  $X$ ,  $Y$  and  $Z$  are one of  $U$  or  $D$  – indicating Up or Down. The general strategy  $\{X, YZ\}$  indicates the decision to move  $X$  at the first node and then  $Y$  at the second if Nature moves Up at the first chance node, or  $Z$  at the second if Nature moves Down at the first chance node. So one strategy is  $\{U, UU\}$  – where the subject moves Up at the first node and then moves Up at the second node, irrespective of what Nature does at  $C1$ . Another strategy is  $\{U, UD\}$  – where the subject moves Up at  $S$  and then moves Up if Nature moves Up at  $C1$  and Down if Nature moves Down at  $C1$ . Associated with any strategy is a probability distribution over either penultimate payoffs or final payoffs. For example, the choice of strategy  $\{U, UU\}$  will lead intermediately to one of  $A$  or  $C$ , each with equal probability<sup>16</sup>, and will lead finally to one of  $a1$ ,  $a2$ ,  $c1$  or  $c2$ , again each with equal probability. We will denote a gamble with outcomes  $a, b, c, d, \dots$ , each with equal probabilities by  $[a, b, c, d, \dots, J]$ . The complete set of all possible strategies, and their associated intermediate and final outcomes, in this simple experiment is shown in Table 6.

**Table 6** *The strategies and their implied payoff distributions*

Strategy number	Strategy	Implied penultimate payoffs	Implied final payoffs
1	$\{U, UU\}$	$[A, C]$	$[a1, a2, c1, c2]$
2	$\{U, UD\}$	$[A, D]$	$[a1, a2, d1, d2]$

<sup>16</sup> Recall that we have assumed that Nature moves Up or Down at each chance node with probability 0.5

Strategy number	Strategy	Implied penultimate payoffs	Implied final payoffs
3	$\{U, DU\}$	$[B, C]$	$[b1, b2, c1, c2]$
4	$\{U, DD\}$	$[B, D]$	$[b1, b2, d1, d2]$
5	$\{D, UU\}$	$[E, G]$	$[e1, e2, g1, g2]$
6	$\{D, UD\}$	$[E, H]$	$[e1, e2, h1, h2]$
7	$\{D, DU\}$	$[F, G]$	$[f1, f2, g1, g2]$
8	$\{D, DD\}$	$[F, H]$	$[f1, f2, h1, h2]$

### NON-EU SUBJECTS

Let me begin with the most general case – in which we are not prepared to make any assumptions about our subjects, other than they have some vaguely sensible preference functional over static decision problems – that they do not violate monotonicity, for example. So they might be EU, they might be Rank Dependent, they might follow Disappointment Aversion theory, and so on. Additionally suppose we are not prepared to make any assumption about which of the three procedures we described above is used by any particular subject. So we neither know their static preference functional nor their procedure for processing a dynamic decision problem.

An Impossibility Theorem is easy to generate under these conditions:

**Theorem 1:** An Intentions Revealing Experiment is impossible under these assumptions.

**Proof of theorem 1:** The proof is simple and revolves around the fact that we do not know which procedure is being used by a particular subject: he or she could be using the strategy method; he could be using backward induction. Suppose first that we have managed to choose the set  $P$  so that the route<sup>17</sup> followed by a subject using the backward induction method is *either*<sup>18</sup>  $\{U, UU\}$  or  $\{D, DD\}$ . Take a backward inductor subject for whom the preferred route is  $\{U, UU\}$ <sup>19</sup>. Then this subject prefers to move Up at node  $D1$  and Up at node  $D2$ . That is, he or she prefers  $A$  to  $B$  at  $D1$  and prefers  $C$  to  $D$  at  $D2$ .

Let us now consider an individual with the same preferences but one who uses the strategy method. Is the information we have obtained above sufficient to prove that he or she prefers the strategy  $\{U, UU\}$  to  $\{U, DU\}$ ,  $\{U, UD\}$  and  $\{U, DD\}$ ? In

<sup>17</sup> We use this word rather than ‘strategy’ to avoid confusion. The backward inductor actually implements this as a strategy – but did not derive it as a strategy.

<sup>18</sup> We do not know which, ex ante, as this depends upon their preferences, which we do not know.

<sup>19</sup> The proof in the contrary case follows in a parallel manner.

other words is the fact that  $A$  is preferred to  $B$  and that  $C$  is preferred to  $D$  *sufficient* to show that  $[A, C]$  is preferred to  $[B, C]$ ,  $[A, D]$  and  $[B, D]$ ?

Unfortunately not. As we show in Appendix Theorem 1, for any  $A, B, C$  and  $D$  that satisfy the conditions that we have stated above, we can always find some non-EU preferences for whom  $A$  is preferred to  $B$  and  $C$  is preferred to  $D$  but either  $[B, C]$  is preferred to  $[A, C]$  or  $[A, D]$  is preferred to  $[A, C]$  or both. In other words, even if all backward inductors are following the route  $\{U, UU\}$  there may be strategy players with the same preferences for whom  $\{U, UU\}$  is *not* the best strategy.

## EU SUBJECTS

The problem above is that different procedures for reducing a dynamic problem to a static decision problem may lead to different solutions for individuals with non-EU static preference functionals. This, through Theorem 1, makes an Intentions Revealing Experiment impossible. Let us therefore assume that all our subjects satisfy Expected Utility theory. Does this help us? The answer is ‘no’ as the next theorem shows.

**Theorem 2:** An Intentions Revealing Experiment is impossible under these assumptions.

**Proof of theorem 2:** Consider  $A$  and  $B$ . We have assumed that  $a_1 \succ a_2$  and that  $b_1 \succ b_2$ . Furthermore we do not want our results to be driven by dominance so we want neither that  $A$  dominates  $B$  or that  $B$  dominates  $A$ . This requires that we have *either* that  $a_1 \succ b_1$  and  $b_2 \succ a_2$  or that  $b_1 \succ a_1$  and  $a_2 \succ b_2$ . Which way round is irrelevant (as will be seen) and so let us assume that  $a_1 \succ b_1$  and  $b_2 \succ a_2$ . If you like you can interpret this as saying that  $A$  is *riskier* than  $B$  – since  $A$ 's best outcome is better than the best outcome of  $B$  and  $A$ 's worst outcome is worse than the worst outcome of  $B$  – but it is not riskier in the Rothschild and Stiglitz sense, since  $A$  and  $B$  do not necessarily have the same mean<sup>20</sup>. However we can say that someone *sufficiently* risk-loving will prefer  $A$  while someone insufficiently risk-loving will prefer  $B$ . The question now is: can we choose  $A, B, C$  and  $D$  so that some people prefer  $A$  to  $B$  and  $C$  to  $D$ , while the others prefer  $B$  to  $A$  and  $D$  to  $C$ ? The problem is that the pair ( $A$  and  $B$ ) cannot be the same as the pair ( $C$  and  $D$ ) – for otherwise the chance node at  $C_1$  would not exist - and Appendix

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<sup>20</sup> It is riskier in the sense used by Hey and Lambert (1989) in generalizing the results of Rothschild and Stiglitz.

Theorem 2 shows that it does not follow that if  $A$  is preferred to  $B$  then  $C$  is preferred to  $D$  or vice versa. So *either* even if someone is sufficiently risk-loving to prefer  $A$  to  $B$  then it does not follow that they are sufficiently risk-loving to prefer  $C$  to  $D$  or even if someone is sufficiently risk-loving to prefer  $C$  to  $D$  then it does not follow that they are sufficiently risk-loving to prefer  $A$  to  $B$ . The problem is that ( $A$  and  $B$ ) must differ from ( $C$  and  $D$ ) and if we do not know anything about an individual's utility function other than *either* they prefer  $A$  to  $B$  or that they prefer  $C$  to  $D$  that is not sufficient to tell us whether they prefer  $C$  to  $D$  (given that they prefer  $A$  to  $B$ ) or whether they prefer  $A$  to  $B$  (given that they prefer  $C$  to  $D$ ).

### **EU SUBJECTS WHO ARE EITHER EVERYWHERE RISK-AVERSE OR EVERYWHERE RISK-LOVING**

The above result gives us a clue as to what assumptions we might need to design an Intentions Revealing Experiment. Suppose we assume that all our subjects are *either* everywhere risk-lovers or everywhere risk-averse. Then we can make  $A$  and  $B$  have the same mean – with  $A$  riskier than  $B$  – and we can make  $C$  and  $D$  have the same mean –with  $C$  riskier than  $D$ . Then all the risk-lovers will choose Up at the second decision node in the top part of the tree. This suggests that we design the tree so that the risk-lovers go Up at the first decision node, and continue to play Up thereafter, while all the risk-averse play Down at the first decision node and continue to play Down thereafter. Using the same logic as that used to design the gambles  $A$ ,  $B$ ,  $C$  and  $D$ , we make  $E$  and  $F$  have the same mean but  $E$  riskier than  $F$  and we make  $G$  and  $H$  have the same mean but  $G$  riskier than  $H$ . This means that all risk-averse will play Down at the second decision node in the bottom half of the tree.

We have not finished. We now want to persuade all the risk-lovers to choose Up at the first decision node and all risk-averse to choose Down at the first decision node. How do we do this? Well, we have already set things up so that, at the second decision node, risk-lovers everywhere play Up while risk-averse everywhere play Down. So, as viewed from the first decision node the risk-lovers are choosing between  $[A, C]$  and  $[E, G]$  while the risk-averse are choosing between  $[B, D]$  and  $[F, H]$ . We therefore want to make  $[A, C]$  more attractive to risk-lovers than  $[E, G]$  and we want to make  $[F, H]$  more attractive to risk-averse than  $[B, D]$ . At the same time, we want to respect the conditions above: that  $A$

and  $B$  have the same mean but  $A$  is riskier; that  $C$  and  $D$  have the same mean but  $C$  is riskier; that  $E$  and  $F$  have the same mean but  $E$  is riskier; and that  $G$  and  $H$  have the same mean but  $G$  is riskier. The argument goes through in a more general case but let us consider a rather special case – in which  $B$ ,  $D$ ,  $F$  and  $H$  are all *certainties* – that is  $b_1 = b_2 = b$ ,  $d_1 = d_2 = d$ ,  $f_1 = f_2 = f$  and  $h_1 = h_2 = h$ . Then for all risk-aversers to prefer to play Down at the first decision node we require that  $[F,H]$  is more attractive to them than  $[B,D]$ . We could guarantee that by putting  $f + h = b + d$  (thus guaranteeing that the means of  $[F,H]$  and  $[B,D]$  are equal) and then by putting  $b > f > h > d$  – so that  $[F,H]$  is less risky than  $[B,D]$ .

So the secret is to tempt the risk-aversers Down by making the two certainties in the bottom half of the tree jointly more attractive to risk-aversers than the two certainties in the top half of the tree. This entices the risk-aversers Down at the first decision node. We then do a similar thing to tempt the risk-lovers Up at the first decision node – make the risky prospects in the upper part of the tree more attractive than the risky prospects in the bottom half of the tree. We can do this by making them riskier.

An example is presented in Figure 18. It will be seen from this that at all second decision nodes  $D_1$  through  $D_4$  all risk-lovers will choose Up and all risk-aversers will choose Down. So the risk-aversers know that if they choose Up at the first decision node they will end up either with 12 or with 8 – each equally likely – whereas if they choose Down at the first decision node they will end up with either 11 or 9 – each equally likely. All risk-aversers prefer  $[11,9]$  to  $[12,8]$  so all riskaversers will choose Down at the first decision node and will continue to play Down thereafter. Risk-lovers, on the other hand, knowing that they will play Up at any second decision node have a choice between  $[14,10,10,6]$  by playing Up at the first node and  $[12,10,10,8]$  by playing Down at the first node. For all risk-lovers the prospect  $[14,10,10,6]$  is more attractive than the prospect  $[12,10,10,8]$  – because the former is riskier than the latter – so they will choose Up at the first decision node and will continue to play Up thereafter.

We have seen, therefore, that if we are able to make a sufficiently strong assumption about the preferences of our subjects – in this case, assuming that they are either everywhere risk-loving or everywhere risk-averting – we can design an Intentions Revealing Experiment. (Of course, this cannot work for the dividing case – the individual who is risk-neutral – for he or she is everywhere indifferent.)

### GENERALISATIONS AND CONCLUSIONS

It should be clear that there are obvious generalisations of the ‘Possibility Theorem’ of section 4. For instance we could take some reference individual – say an individual with utility function  $R(\cdot)$  and assume that all other individuals are *either* everywhere more risk-averse than the reference individual *or* everywhere more risk-loving than the reference individual. This follows the line of argument of Hey and Lambert (1989) in generalising the results of Rothschild and Stiglitz. Then we amend what we have done above in Figure 18. Note that there the ‘reference individual’ was the risk-neutral individual. We made all the final choices between gambles with the same mean but the Up decision riskier. In this current section’s generalisation we construct the tree so that in all the final choices the reference individual is indifferent – and once again we make the Up decision riskier. So all those agents everywhere more risk-loving than our reference individual will play Up at the first node and continue to play Up thereafter while all those agents everywhere more risk-averse than our reference individual will play Down at the first node and continue to play Down thereafter. (Though, of course, this cannot work for our reference individual – who is everywhere indifferent<sup>21</sup>).

There are clearly countless other generalisations of this form. In Hey (2002) it was supposed that if an individual prefers some gamble  $A$  to some other gamble  $B$  then he or she will also prefer the gamble  $A+d$  to the gamble  $B+d$  – where by the notation  $A+d$  we mean a gamble which has the same probabilities and outcomes as  $A$  except that all outcomes are increased by the constant  $d$  (which could be negative). Notice that this assumption has the same type of structure as before: it enables us to divide our subjects into two groups – one sub-group which is always in that sub-group and the rest which are always in some other sub-group. This then enables us to design our tree.

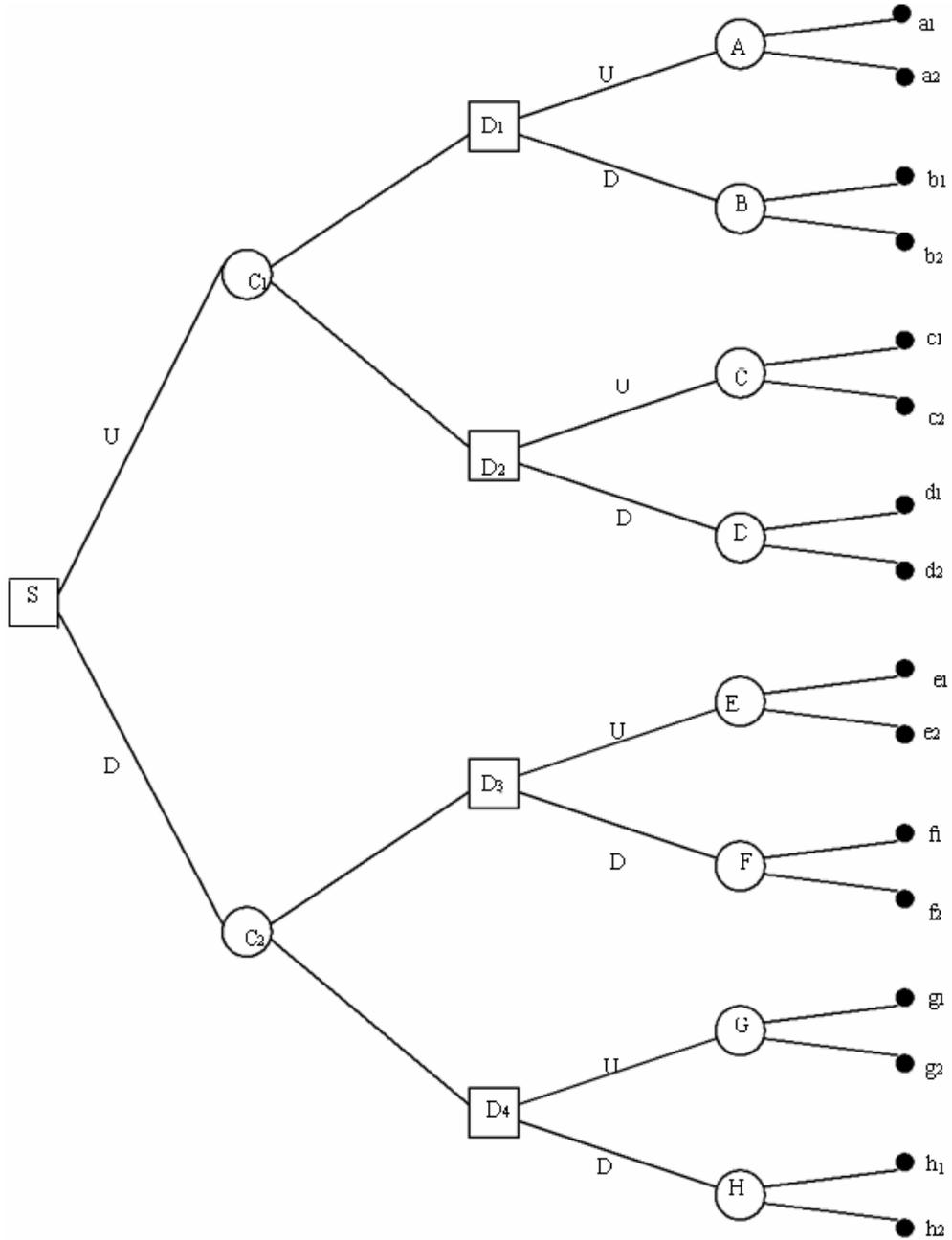
So we have a way of designing an Intentions Revealing Experiment. We need to be able to divide our subjects up into two groups – and be sure that they remain in these two subgroups at all stages in the experiment. This appears to be difficult – without making what would appear to be strong assumptions<sup>22</sup>.

<sup>21</sup> But then he or she has mass zero in the population.

<sup>22</sup> One possibility is that we use a modification of the Binary Lottery incentive mechanism – the payoffs at the end of the tree are probability points to be used in a binary lottery. The trouble with this is twofold: (1) the Binary Lottery mechanism is not viewed with favour by all experimental economists; and (2) the addition of this “sting in the tail” complicates the experiment considerably.

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**Figure 17** *The Basic Tree*

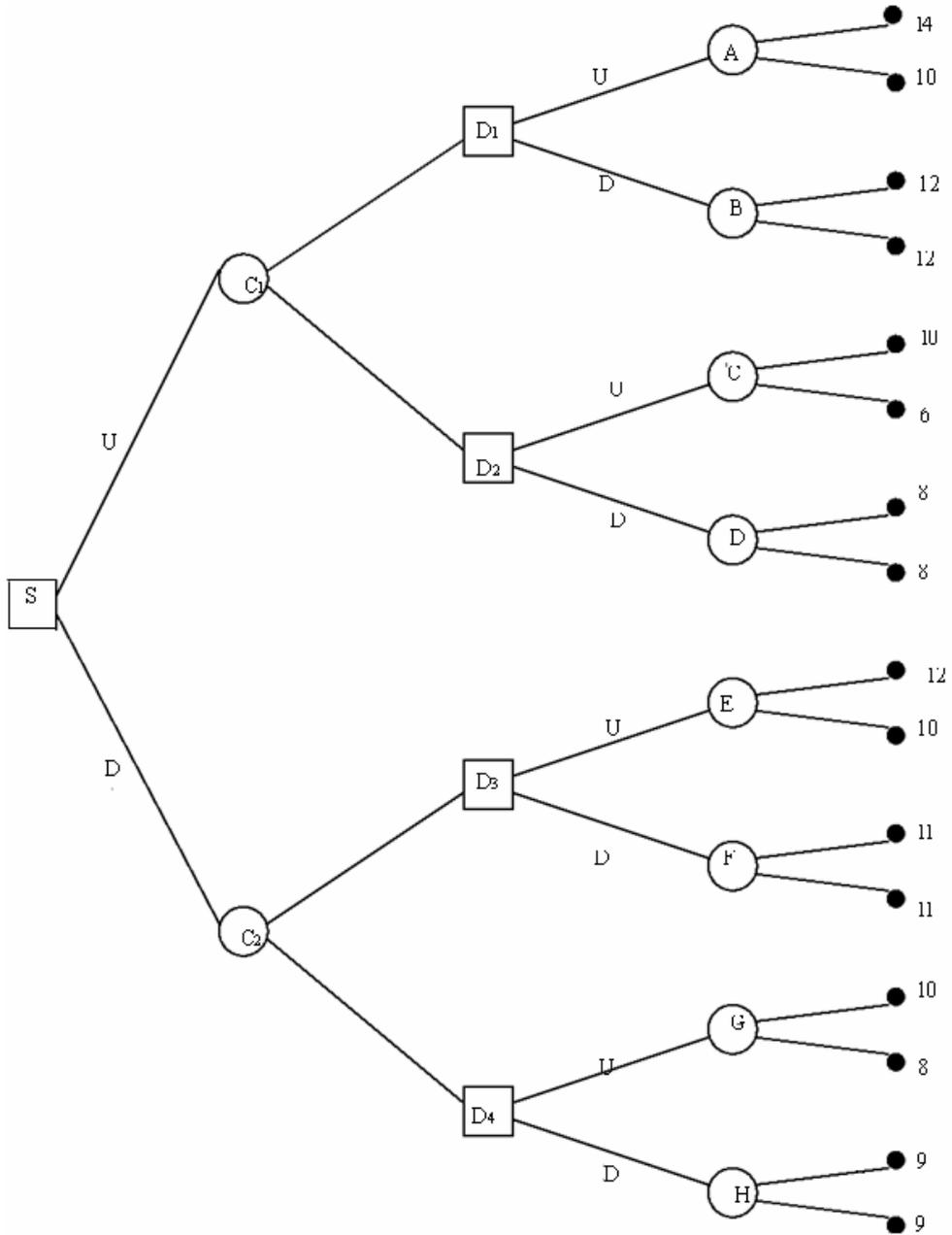


Figure 18 A Specific Example

### Appendix Theorem 1

We do not provide a complete proof – one can be provided on request. The algebra of the proof varies from case to case but the principal is the same. The thing that we want to prove is the following. Suppose we have two risky prospects  $C$  and  $D$  and we know that some non-EU person prefers  $C$  to  $D$ . Does it follow that this individual prefers  $[A, C]$  to  $[A, D]$  where  $A$  is another distinct risky prospect? The answer is no – since we can always find some non-EU person who prefers  $C$  to  $D$ , yet prefers  $[A, D]$  to  $[A, C]$ . The key to the proof is finding someone who is  $\epsilon$ -close to indifference between  $C$  and  $D$ . Because  $A$  has to be different there will always be some non-EU preference function for which  $[A, D]$  is preferred to  $[A, C]$ . As we simply have to show that such a person exists we do not need to work with a general preference functional but can take any one that satisfies our requirements.

Let us assume rank *dependent* preferences. Let us suppose  $u(\cdot)$  is the utility function and that  $w(\cdot)$  is the cumulative probability weighting function. With all the chance nodes being 50-50 gambles, all risky prospects in our experiment have outcomes which have probabilities of 1/4 or 1/2. We therefore need the value of the probability weighting function at values 0, 1/4, 1/2, 3/4, and 1. We obviously take  $w(0) = 0$  and  $w(1) = 1$  and use the following notation:  $w_1 = w(1/4)$ ,  $w_2 = w(1/2)$  and  $w_3 = w(3/4)$ .

For any given risky prospect the rank dependent functional ranks the outcomes in order, from the worst to the best, and then evaluates the prospect. So the order of the outcomes is crucial to the evaluation. Accordingly there are many different cases, depending upon the ordering of the 6 outcomes,  $a_1, a_2, c_1, c_2, d_1$  and  $d_2$ , though some of these can be eliminated by the restrictions we placed earlier – that is:  $a_1 ? a_2, c_1 ? c_2, d_1 ? d_2$  and  $c_1 ? d_1 ? d_2 ? c_2$ . The number of cases is increased by the fact that the rank dependent preference functional distinguishes between inequalities and strict inequalities. To save space we consider here just one case. The proof for all the other cases follows a similar path. We take the case  $a_1 > a_2 > c_1 > d_1 > d_2 > c_2$ .

We start with the supposition that we have an individual who (just) prefers  $C$  to  $D$ . It follows that

$$\{u(c_2)(1-w_2) + u(c_1)w_2\} - \{u(d_2)(1-w_2) + u(d_1)w_2\} > \epsilon \quad (A1)$$

where  $\varepsilon$  is an arbitrarily small positive number – reflecting the fact the individual (just) prefers  $C$  to  $D$ .

The question now is: can such an individual prefer  $[A,D]$  to  $[A,C]$ ? The answer is ‘yes’ if the expression in equation below is negative.

$$\{u(c_2) + [u(c_1) - u(c_2)]w_3 + [u(a_2) - u(c_1)]w_2 + [u(a_1) - u(a_2)]w_1\} - \\ \{u(d_2) + [u(d_1) - u(d_2)]w_3 + [u(a_2) - u(d_1)]w_2 + [u(a_1) - u(a_2)]w_1\}$$

We can simplify this. The above expression is negative if the expression below is negative.

$$\{u(c_2)(1-w_3) + u(c_1)(w_3-w_2)\} - \{u(d_2)(1-w_3) + u(d_1)(w_3-w_2)\}$$

We can write this as the difference between two weighted averages – just as (A1) above – as follows:

$$\{u(c_2)[(1-w_3)/(1-w_2)] + u(c_1)[(w_3-w_2)/(1-w_2)]\} - \{u(d_2)[(1-w_3)/(1-w_2)] + u(d_1)[(w_3-w_2)/(1-w_2)]\} \quad (A2)$$

Now examine (A1) – it is the difference between a weighted average of  $u(c_2)$  and  $u(c_1)$ , with weights  $(1-w_2)$  and  $w_2$ , and the same weighted average of  $u(d_2)$  and  $u(d_1)$ . Expression (A1) says that this difference is (just) positive. Expression (A2) is the difference between a weighted average of  $u(c_2)$  and  $u(c_1)$ , with weights  $(1-w_3)/(1-w_2)$  and  $(w_3-w_2)/(1-w_2)$ , and the same weighted average of  $u(d_2)$  and  $u(d_1)$ . The question is: whereas the weights in expression (A1) made the difference (just) positive, can we have weights in expression (A2) that makes the difference negative? The answer is yes in general. Why? Well, in the case of EU we have  $w_1 = 1/4$ ,  $w_2 = 1/2$  and  $w_3 = 3/4$ , in which case the weights in expression (A1) are exactly the same as the weights in expression (A2) - and so the expression (A2) is (just) negative. In the case of non-EU preferences, we can either put more (less) weight on  $c_2$  and  $d_2$  and less (more) on  $c_1$  and  $d_1$  by decreasing (increasing)  $w_3$  relative to its EU value of  $3/4$ . By so doing – depending upon the curvature of the utility function - we can make the value of the expression (A2) (just) negative. Thus the individual prefers  $C$  to  $D$  yet prefers  $[A,D]$  to  $[A,C]$ .

**Appendix Theorem 2**

We are given that an EU person prefers  $A$  to  $B$  or prefers  $B$  to  $A$ <sup>23</sup>. For simplicity we take  $A$  as riskier than  $B$  in the sense used in the text. That is,  $a_1 > b_1 > b_2 > a_2$ . The question is: does it follow that we can choose  $C$  and  $D$  in such a way that those individuals who prefer  $A$  to  $B$  prefer  $C$  to  $D$  and those individuals who prefer  $B$  to  $A$  prefer  $D$  to  $C$ ? – subject to the crucial proviso that ( $A$  and  $B$ ) are different from ( $C$  and  $D$ ). Clearly if we put  $C = A$  and  $D = B$  then we know that the individuals who prefer  $A$  to  $B$  must prefer  $C$  to  $D$  and those who prefer  $B$  to  $A$  prefer  $D$  to  $C$  – but this violates the proviso. We should therefore make either  $C$  a little bit different from  $A$  and/or  $D$  a little bit different from  $B$ . But this makes the difference which makes it possible for there to be an individual who prefers  $A$  to  $B$  and  $D$  to  $C$ .

You can obviously do it through *dominance* – simply make  $C$  dominate  $A$  and  $B$  dominate  $D$ . Then it immediately follows that  $A$  preferred to  $B$  implies that  $C$  must be preferred to  $D$ . But it does not work the other way round – if an individual prefers  $B$  to  $A$  then it may be the case that this individual prefers  $C$  to  $D$  – because  $C$  is better than  $A$  and  $D$  is worse than  $B$ . In fact we can guarantee that there is always someone who prefers  $B$  to  $A$  but is sufficiently close to indifference so that the preference is reversed when we compare  $C$  with  $D$ . The point is that ( $A$  and  $B$ ) must be different from ( $C$  and  $D$ ). Without defining this formally, let us say that they are  $\varepsilon$ -different – where  $\varepsilon$  is non-zero. We can always find some individual (given that we have a continuum of subjects some of whom prefer  $A$  to  $B$  and others who prefer  $B$  to  $A$ ) who is  $\varepsilon/2$  close to indifference. This individual will switch preference.

Furthermore, if neither  $A$  nor  $C$  dominate the other and neither  $B$  or  $D$  dominate the other<sup>24</sup> it is even easier to find utility functions for which  $A$  is preferred to  $B$  and  $D$  to  $C$  and other functions for which  $B$  is preferred to  $A$  and  $C$  to  $D$ . A formal proof seems unnecessary but can be provided on request.

<sup>23</sup> Indifferent people are ignored in what follows. Obviously such people are potentially a problem – if an individual is indifferent between all the various decisions in the tree then he or she has no need of a plan.

<sup>24</sup> Recall that we are assuming that  $a_1 \geq b_1$  and  $b_2 \geq a_2$ .



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## SAVING-ECONOMIC GROWTH NEXUS IN NIGERIA, 1970-2007: GRANGER CAUSALITY AND CO-INTEGRATION ANALYSES

Nurudeen ABU\*

***Abstract** The controversy surrounding the direction of causality between saving and economic growth motivated this study. The author employed the Granger-causality and co-integration techniques to analyze the relationship between saving and economic growth in Nigeria during the period 1970-2007. The Johansen co-integration test indicates that the variables (economic growth and saving) are co-integrated, and that a long-run equilibrium exists between them. In addition, the granger causality test reveals that causality runs from economic growth to saving, implying that economic growth precedes and granger causes saving. Thus, we reject the Solow's hypothesis that saving precedes economic growth, and accept the Keynesian theory that it is economic growth that leads to higher saving. The author recommends that government and policy makers should employ policies that would accelerate economic growth so as to increase saving.*

***Keywords:** economic growth, saving, granger causality, co-integration.*

### INTRODUCTION

The examination of the causal relationship between saving and economic growth is very important because it provides useful information on which economic variable(s) that the government and relevant authorities need to control in order to attained the desired level of the targeted variable or variables (Sajid and Sarfraz, 2008). For example, if the results of causality test indicate that saving

precedes and causes economic growth, then government and policy makers can design or employ policies that would promote the mobilization of saving in order to achieve higher economic growth. On the other hand, if econometric investigation reveals the reverse, then, efforts would be made to remove the obstacles to and accelerate economic growth in order to raise the level of saving. The importance of saving on economic growth has been discussed in details (for instance, see McKinnon, 1973; and Shaw 1973). Although the relationship between saving and economic growth is an important one, the direction of causality between the variables has continued to generate series debate among scholars (Sajid and Sarfraz, 2008). The controversy started with Solow (1956) who alleged that higher saving precedes and causes higher economic growth. In explaining the role of saving in economic growth, Sinha and Sinha (1998) asserted that increases in saving results to increases in capital formation and investment, thereby raising the growth of national output in an economy. Following the claim by Solow, authors like Jappelli and Pagano (1994), Alguacil et al. (2002) among others, reported that higher savings growth precedes higher economic growth. In fact, Olajide (2009) findings that a unidirectional causality runs from saving to economic growth suggest that the low level of saving may be responsible for the sluggish and unimpressive growth in Nigeria over time. In addition, is the World Bank (1993) submission that higher savings rates account the differences in economic growth between developed and developing economies.

However, the proponents of the Keynesian hypothesis stressed that it is growth of output (or income) that causes growth of saving. The supporters of this theory argue that increases in output of leads increases in incomes, thus raising the level of saving in the economy. For instance, the work of Carroll and Weil (1994) which suggested that economic growth preceded savings motivated further researches that aim at ascertaining the direction of causality between saving and economic growth. To this end, Gavin et al. (1997), Sinha and Sinha (1998), and Agarwal (2001) confirmed that higher economic growth precedes and causes higher saving.

An important issue that arises from the foregoing discussion is the divergence in the perception and empirical findings among scholars. Thus, the main objective of this paper is to investigate the direction of causality between saving and economic growth in Nigeria between 1970 and 2007. The paper is organized as follows. Following the introduction is the literature review and

theoretical framework. Section three is for methodology and model estimation, while section four consists of discussion of results. Section five contains conclusion and policy recommendations.

### **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

In this section, we survey the literature on saving-economic growth relationship, as well as present the theoretical framework for the study. Scholars like Solow (1956) emphasized the importance of saving in economic growth. Following Solow, authors such as McKinnon (1973) and Shaw (1973) supported the view that saving plays a crucial role in economic development. This is true because rising saving increases the level of investment, thereby accelerating economic growth (Sinha and Sinha, 1998). In the life-cycle hypothesis, Modigliani (1970) suggested that higher growth raises the life-time wealth of young (working) savers relative to retired (non-working) dissavers, thus raising the total savings of the economy. The increase in national savings in turn leads to higher investment and expansion of output.

Some authors have attempted to examine the causal relationship between saving and economic growth. For example, Bassam AbuAl-Foul (2010) employed an econometric technique to investigate the long-run relationship between real gross domestic product and real gross domestic saving for Morocco and Tunisia during the period 1965-2007 and 1961-2007, respectively. The regression exercise reveals interesting results. For instance, it was shown that whereas a long-run relationship exists between gross domestic product and gross domestic saving in Morocco, there was no such evidence for Tunisia. Secondly, the Granger causality test indicates the existence of a two-way causal relationship between gross domestic product growth and gross domestic saving growth in Morocco. Lastly, the author observed a unidirectional Granger causality between real gross domestic product and real gross domestic saving as causality runs from gross domestic saving growth to gross domestic product growth in Tunisia. Sinha and Sinha (2007) examined the relationship between per capita saving and per capita GDP for India during the 1950-2004 period. The authors employed the Toda and Yamamoto tests of Granger causality and discovered that there is no causal relationship between per capita GDP and per capita household saving/per capita corporate saving. On the contrary, the results show the existence of a bi-directional causal relationship between per capita household saving and per capita corporate saving.

Andersson (1999) used the bivariate vector autoregressive (VAR) or vector error-correction (VEC) models to analyze the relationship between saving and GDP for a group of countries that include Sweden, UK, and USA. The results of the Granger non-causality test indicated that the direction of causal relationship between saving and output differ across the countries.

In his paper, Mohan (2006) examined the relationship between domestic savings and economic growth by taking into consideration the income levels of the different countries studied. He grouped the countries into various categories, namely low income countries (LICs), low middle income countries (LMCs), upper middle income countries (UMCs), and high income countries (HMCs). The author's results support the claim that causality runs from economic growth rate to growth rate of savings. The author submitted that the income level of a country plays an important role in determining the causal relationship between savings and economic growth. In addition, the author reported that empirical results were mixed in the LICs, while causality runs from growth rate to savings rate for most of LMCs. Finally, whereas in the HICs (except Singapore), causality runs from economic growth rate to growth rate of savings, a feedback causal relation was more prevalent in the UMCs. In the work done by Verma (2007), the regression results support the Carroll-Weil hypothesis that it is not savings that causes economic growth, but instead, it is growth that causes savings in India. Alguacil et al (2002) investigated the saving-growth nexus by taking into account the impact of foreign capital in complementing domestic saving and the beneficial effects of FDI on domestic investment and income. The Granger non-causality test revealed that higher saving precedes economic growth. Sajid and Sarfraz (2008) investigated the causal relationship between savings and output in Pakistan by using quarterly data for the period of 1973:1 to 2003:4. The authors employed both co-integration and the vector error correction techniques and discovered that bi-directional long run relationship exists between savings and output level. Moreover, the results showed that there is a unidirectional long run causality from public savings to output (GNP and GDP), and private savings to gross national product (GNP). Furthermore, the long run results favour the capital fundamentalist's point of view that savings precede the level of output in case of Pakistan. In addition, the results showed that a unidirectional short run causality runs from gross national product (GNP) to national and domestic savings; and from gross domestic product (GDP) to public savings. Besides, a short run causality was shown to run from national savings to

gross domestic product (GDP). Finally, the overall short run results favour Keynesian point of view that savings depend upon level of output.

Agarwal (2001) investigated the causality between gross domestic product (GDP) and saving for a sample consisting Asian economies. The author discovered that, in most economies causality runs from GDP to saving. In Mexico, Sinha and Sinha (1998) employed econometric techniques to validate or invalidate the claim that higher saving rate leads to high growth rate. The empirical results did not support the view that higher saving rate causes higher economic growth. The authors concluded that causality runs from economic growth to saving. Saltz (1999) examined the causal relationship between savings and growth rate of real output for a group that consists eighteen Latin American and Newly Industrialized countries between 1960 and 1991. The author found that higher growth rate of real output causes higher growth rate of savings. Anoruo and Ahmad (2001) analyzed the causal relationship between the growth of domestic savings and economic growth for a sample that consist seven African economies (Congo, Cote d'Ivoire, Ghana, Kenya, Nigeria, South Africa and Zambia). The econometric results illustrated that economic growth Granger-causes the growth rate of domestic savings for all the countries except Congo where reverse causality was found. In addition, the authors discovered a feedback causal relation for Cote d'Ivoire and South Africa. Waithima (2008) used the Hendry Model with a two-step method to model a saving function for Kenya. The author observed that a 1 percentage increase in GDP growth rate causes a 0.5 percentage increase in private saving. Moreover, the causality tests revealed a unidirectional causality that runs from per capita GDP to private saving. In Nigeria, Olajide (2009) employed the Toda and Yamamoto (1995) and Dolado and Lutkepohl (1996) methodology to investigate the direction of causal relationship between saving and economic growth in Nigeria during the 1970 and 2006 period. The causality test results showed the existence of a unidirectional causality between savings and economic growth and the complementary role of FDI in growth.

This study is very important because empirical studies that examine the causal relationship between saving and economic growth in Nigeria remain scanty (see Olajide, 2009). Besides, the study by Olajide included foreign direct investment as a complementary variable to domestic saving. Unfortunately, foreign capital inflow to Nigeria has continued to decline, thus increasing the need by government and policy makers to look inward and promote the mobilization of

domestic saving. In addition, is the desire of the Nigerian economy in attaining higher economic growth rate. Moreover, our paper employs both granger causality and co-integration techniques to analyze the relationship between saving and economic growth in Nigeria.

### METHODOLOGY AND MODEL ESTIMATION

This paper employs the granger causality and co-integration techniques to examine the relationship between saving and economic growth. The econometric model to be used has its basis in the Keynesian model and the Solow hypothesis. For example, the Keynesian model states that saving ‘S’ is a function of income (output) ‘Y’. Thus,

$$S = \alpha_0 + \alpha_1 Y + U_1 \quad (1)$$

However, for the purpose of this study, we modified the equation above to derive the one below:

$$GNS = \alpha_0 + \alpha_1 GRY + U_1 \quad (2)$$

Where GNS and GRY denote saving and economic growth, respectively. However, Solow argued that higher saving preceded economic growth. Therefore, the growth model specifies economic growth as a function of saving. Thus,

$$GRY = \beta_0 + \beta_1 GNS + U_2 \quad (3)$$

Where  $\alpha_0$  and  $\beta_0$  represent constants, and  $\alpha_1$  and  $\beta_1$  are the slope coefficients, respectively.  $U_1$  and  $U_2$  refer to the disturbance term in the respective equations. The variables used in the paper are annual data (time series). They were collected from the central bank of Nigeria statistical bulletin (various issues). The variables are measured as follows. GNS is measured as the growth of gross national saving, while GRY is measured as the growth of gross domestic product.

Having specified the saving and growth equations, we conducted a unit root (stationarity) test. This is to ascertain whether the time series are stationary or not. Moreover, stationarity is required so as avoid spuriousness of the regression results. Standard economic theory requires that economic variables be stationary before estimating their relationship. Thus, we employed the Augmented Dickey-

Fuller (ADF) statistic in order to perform the stationarity test. The result of the stationarity test is presented below:

**Table 7** Results of the stationarity (unit root) test

Variables	ADF-statistic	Critical values	Order of integration
GRY	-5.206166 (0.0001)	1% = -3.626784 5% = -2.945842 10% = -2.611531	Stationary at level
GNS	-4.286109 (0.0018)	1% = -3.626784 5% = -2.945842 10% = -2.611531	Stationary at level

The stationarity tests illustrate that the variables (economic growth and saving) are stationary at first difference at 1%, 5% and 10% critical values. The next step is to determine the direction of causality between the variables.

In order to conduct the causality test, we employed the Granger causality statistic. According to Granger (1969), variable X is said to “Granger-cause” Y if and only if Y is better predicted by using the past values of X than by not doing so with the past values of Y being used in either case. In other words, if a scalar X can help to forecast another scalar Y, then we say that X Granger causes Y. Our objective is to see whether current values of the dependent variable can be explained by past values of the explanatory variable (unidirectional relationship), or if the relationship is two-way (bi-directional or feedback), that is, both dependent and explanatory variable explain each other. The specification for the Granger causality test is;

$$GRY_t = \sum_{i=1}^n \alpha_1 GNS_t + \sum_{j=1}^n \alpha_2 GRY_{t-1} + U_{1t-1} \quad (4)$$

and,

$$GNS_t = \sum_{i=1}^n \alpha_3 GRY_t + \sum_{j=1}^n \alpha_4 GNS_{t-1} + U_{2t-1} \quad (5)$$

Where  $GRY_t$  and  $GRY_{t-1}$  represent both present and lagged values of the dependent variable, and  $GNS_t$  and  $GNS_{t-1}$ , represent the current and lagged values of the explanatory variable, respectively. The null hypothesis,

Ho:  $\alpha_1=0$ , that is the explanatory variable does not granger-cause the dependent variable.

Ho:  $\alpha_3=0$ , that is the dependent variable does not granger-cause the explanatory variable.

The decision rule for the test is where the value of the F-statistic is low and the probability value is high, we reject the null hypothesis. On the contrary, where the F-statistic value is high and the probability value low, we accept the null hypothesis.

**Table 8** Results of the Granger causality test

Pairwise Granger Causality Tests

Date: 01/17/10 Time: 12:31

Sample: 1970 2007

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
GRY does not Granger Cause GNS	35	2.98730	0.06560
GNS does not Granger Cause GRY		0.40463	0.67081

The results of the Granger causality indicate that economic growth (GRY) granger causes saving growth. However, the results reveal that saving growth does not granger causes economic growth. In fact, the causality test illustrates a unidirectional causal relationship that runs from economic growth to saving growth. Lastly, we employed the Johansen co-integration approach to examine whether the variables are co-integrated. The result of the co-integration test is presented below:

**Table 9** Results of Johansen Co-integration test

Date: 01/17/10 Time: 12:35

Sample(adjusted): 1973 2007

Included observations: 35 after adjusting endpoints

Trend assumption: Linear deterministic trend

Series: GNS GRY

Lags interval (in first differences): 1 to 1

## Unrestricted Cointegration Rank Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.349940	29.16011	15.41	20.04
At most 1 **	0.331324	14.08594	3.76	6.65

\*(\*\*) denotes rejection of the hypothesis at the 5%(1%) level

Trace test indicates 2 cointegrating equation(s) at both 5% and 1% levels

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None *	0.349940	15.07417	14.07	18.63
At most 1 **	0.331324	14.08594	3.76	6.65

\*(\*\*) denotes rejection of the hypothesis at the 5%(1%) level

Max-eigenvalue test indicates 2 cointegrating equation(s) at the 5% level

Max-eigenvalue test indicates no cointegration at the 1% level

The results of the con-integration test are reported here. The Trace-Statistic value is shown to be greater than the critical values at both 1% and 5% levels, thus indicating 2 co-integrating equations at both 1% and 5% levels. However, the Max-Eigen Statistic indicates 2 co-integrating equations at 5% level, while it shows no co-integration at 1% level.

## DISCUSSION OF RESULTS

This section discusses the results obtained in the previous section. The stationarity test indicates that the variables, economic growth and saving growth are stationary at level. Secondly, the co-integration test illustrates that the variables (saving and economic growth) are co-integrated, and implying that a long-run relationship exist between them. Finally, the Granger causality test reveals that causality runs from economic growth to saving growth. Thus we reject the Solow's claim that saving precedes economic growth, and accept the Keynesian theory, that it is higher economic growth that leads to higher saving growth.

## CONCLUSION AND POLICY RECOMMENDATIONS

This paper investigates the causal relationship between economic growth and saving in Nigeria. The Granger causality statistic indicates that a unidirectional causality running from economic growth to saving. To this end, we recommend

that government and policy makers should employ policies that would accelerate economic growth so as to increase saving. These include among others the following. Firstly, government should increase its investment in the provision of infrastructure like power, roads, education and so on. This will help to reduce the costs of doing business as well as increase the profitability of firms, thereby raising the economy's production of goods and services. Secondly, government should encourage the monetary authority like the central bank of Nigeria to reduce interest rate so that prospective investors can increase their investment and raise the nation's production capacity. Others measures include sustenance of political stability that country current enjoys; encouragement of inflows of foreign direct investment; and sustenance of the war on corruption.

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### Appendix 1: Gross national saving and Gross domestic product

Years	Gross National Saving (Nm)	Gross Domestic Product (Nm)
1970	341.6	5,205.10
1971	376.3	6,570.70
1972	461.2	7,208.30
1973	586.8	10,990.70
1974	1,137.10	18,298.30
1975	1,815.20	20,957.00
1976	2,255.30	26,656.30
1977	2,592.80	31,520.30
1978	3,009.70	34,540.10
1979	4,161.80	41,947.70
1980	5,769.90	49,632.30
1981	6,562.60	50,456.10
1982	7,514.40	51,653.40
1983	9,443.90	56,312.90
1984	10,988.10	62,474.20
1985	12,521.80	70,633.20
1986	13,934.10	71,859.00
1987	18,676.30	108,183.00
1988	23,249.00	142,618.00
1989	23,801.30	220,200.00
1990	29,651.20	271,908.00
1991	37,738.20	316,670.00
1992	55,116.80	536,305.10
1993	85,027.90	688,136.60
1994	110,966.80	904,004.70
1995	108,490.30	1,934,831.00
1996	132,803.70	2,703,809.00
1997	177,648.70	2,801,972.60
1998	198,653.80	2,721,178.40
1999	272,019.10	3,313,563.10
2000	379,528.00	4,727,522.60
2001	488,045.40	5,374,334.80
2002	592,094.00	6,232,243.60
2003	655,739.70	6,061,700.00
2004	797,517.20	11,411,066.90
2005	1,316,957.40	15,610,881.50
2006	1,739,636.90	18,564,594.70
2007	2,693,554.30	23,280,715.00

Source: Central Bank of Nigeria (various issues)

## FOREIGN PRIVATE INVESTMENT AND ECONOMIC GROWTH IN NIGERIA

Tokunbo S. OSINUBI\*, Lloyd A. AMAGHIONYEODIWE\*\*

***Abstract:** Despite the increased flow of investment to developing countries in particular, Sub-Sahara African (SSA) countries, Nigeria inclusive, are still characterized by low per-capita income, high unemployment rates and low and falling growth rates of GDP, problems which foreign private investment are theoretically supposed to solve. The Nigerian government has been focusing on policies that will help attract foreign investors and yet the economy is still dwindling. It is against this background, that this study analyzed the direction and significance of the effect of foreign private investment on economic growth in Nigeria. Secondary data for the period 1970 to 2005 was used for the study. Among the findings was that Foreign Private Investment, Domestic Investment growth and Net Export growth were positively related to economic growth in Nigeria. More so, the Foreign Private Investment, Domestic Investment growth, Net export growth and the lagged error term were statistically significant in explaining variations in Nigeria's economic growth.*

***Keywords:** Foreign Private Investment, Domestic Investment Growth, and Economic Growth*

### 1. INTRODUCTION

In most economies however, domestic private investment has proven to be insufficient in giving the economy the required boost to enable it meet its growth target because of the mismatch between their capital requirements and saving

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capacity. Foreign private investment, thus, augments domestic resources to enable the country carry out effectively her development programmes and raise the standard of living of her people.

Though foreign private investment is made up of Foreign Direct Investment and Foreign Portfolio Investment, Foreign Direct Investment is often preferred as a means of boosting the economy. This is because FDI disseminates advanced technological and managerial practices through the host country and thereby exhibits greater positive externalities compared with Foreign Portfolio investment which may not involve positive transfers, just being a change in ownership. In addition, available data suggest that FDI flows tend to be more stable compared to Foreign Portfolio Investment (Lipsey, 1999). This is because of the liquidity of Foreign Portfolio Investment and the short time horizon associated with such investments. Also, FDI inflows can be less affected by change in national exchange rates as compared to Foreign Portfolio Investment. However, a balanced combination of the two, taking into consideration the unique characteristics of the recipient economy will bring about the required effects on the economy.

The benefits of Foreign Private investment include transfer of technology, higher productivity, higher incomes, more revenue for government through taxes, enhancement of balance of payments ability, employment generation, diversification of the industrial base and expansion, modernization and development of related industries. According to Feldstein (2000), first, international flows of capital reduce the risk faced by owners of capital by allowing them to diversify their lending and investment. Second, the global integration of capital markets can contribute to the spread of best practices in corporate governance, accounting rules, and legal traditions. Third, the global mobility of capital limits the ability of governments to pursue bad policies. Four, Foreign investment through FDI allows for the transfer of technology - particularly in the form of new varieties of capital inputs - that cannot be achieved through financial investments or trade in goods and services. Foreign investment through FDI can also promote competition in the domestic input market. Five, recipients of FDI often gain employee training in the course of operating the new businesses, which contributes to human development in the host country. Lastly, profits generated by Foreign Investments contribute to corporate tax revenues in the host country. However, the arguments against foreign private investment are that it may cause capital flight which may lead to net capital outflow and thus create balance of

payment difficulties, it also creates income distribution problems when it competes with home investment. Foreign Private investments may also actually be capital intensive, which may not fit in the factor proportions of the recipient country.

Since the 1980s, flows of investment have increased dramatically the world over. Despite the increased flow of investment to developing countries in particular, Sub-Sahara African (SSA) countries are still characterized by low per-capita income, high unemployment rates and low and falling growth rates of GDP, problems which foreign private investment are theoretically supposed to solve.

Nigeria, being one of the top three countries that consistently received FDI in the last decade (Ayanwale, 2007) is not exempted from this category. The Nigerian Government is putting so much effort into attracting foreign investors and yet the economy is still dwindling. Against this background, this study is focused on analyzing the direction and significance of the effect of foreign private investment on the GDP of Nigeria.

The rest of this study is divided into three sections. Section two reviews the literature, section three contains the methodology and empirical results while section four concludes the study.

## **2. REVIEW OF EMPIRICAL LITERATURE.**

The contribution of Foreign Private Investment to the economy has been debated extensively over the years. These debate covers both the developed and developing economies. However, a lot more focus has been put into the study of Foreign Direct Investment since it is seen to have a larger impact on the economy.

In the developed world, it is agreed that Foreign private investment generally play a positive role in the economy, although it varies from county to country and depends on country characteristics, policy environment and sectors. Blomström and Kokko (1997) reviewed the empirical evidence on host country effects of foreign direct investment. They conclude that MNCs may play an important role for productivity and export growth in their host countries, but that the exact nature of the impact of FDI varies between industries and countries, depending on country characteristics and the policy environment. Alfaro(2003) in an empirical analysis using cross-country data for the period 1981-1999 suggests that total FDI exerts an ambiguous effect on growth. From the results, foreign direct investments in the primary sector tend to have a negative effect on growth, while investment in manufacturing a positive one. Evidence from the service sector is ambiguous.

Lensink and Morrissey (2001) in a cross-country study of 88 countries including 20 developing countries, studied the effect of volatility of FDI flows on growth over the 1970-1998 period. They estimated the standard model using cross-section, panel data and instrumental variable techniques. Whilst all results were not entirely robust, there was a consistent finding that FDI has a positive effect on growth whereas volatility of FDI has a negative impact. Ledyeva and Linden (2006) determined the FDI impact on per capita growth in 74 Russian regions during period of 1996-2003. Their framework related real per capita growth rate to initial levels of state variables, such as the stock of physical capital and the stock of human capital, and control variables viewed as important factors in the Russian economy's regional development in the analyzed period. Their results imply that in general FDI (or related investment components) do not contribute significantly to economic growth in Russia in the analyzed period. However some evidence of positive aggregate FDI effects in higher-income regions is relevant. However FDI seems not to play any significant role in the recent growth convergence process among Russian regions.

Empirical evidence from the Czech Republic points to a mixed experience for the impact of foreign investment on domestic firms. Based on firm-level data from the period 1994-1998, an industry-wide inverse relationship was detected between the extent of foreign investment and the turnover of domestic firms (Djankov and Hoekman, 2000). This finding was similar to that of a study focusing on regional effects (1993-1998) which indicated that the productivity of domestic firms had declined in proportion to the level of foreign investment (Torlak, 2004) in a given industry. However, these negative or neutral findings stand in contrast to those of other studies that have detected positive effects. For instance, the introduction of foreign investment was found to have a positive effect on the entry rates of domestic firms at intra- and inter-industry level (Ayyagari and Kosova, 2006), across all industries, during the period 1994-2000.

Ewe-Ghee Lim (2001) summarizes recent arguments/findings on FDI and its correlation with economic growth focusing on literature regarding spillovers from FDI and finds that while substantial support exists for positive spillovers from FDI, there is no consensus on causality.

Mishara and Mody (2001) observed that foreign private investment has been associated with higher growth in some advanced countries. Within the LDCs, however, Foreign private investment is associated with high incidence of crises.

For developing countries, findings have been a little different. Investigations show that they do not benefit as much from foreign investment and most times, face crowding out of their domestic investment due to the inflow of foreign capital. The extent of benefits from foreign private investment depend on their overall macro-economic stability and policy framework. Aremu (1997) submitted that foreign Private Investment accelerate the pace of economic development of the LDCs up to a point where a satisfactory rate of growth can be achieved on a self-sustaining basis. He observe that the main responsibility of foreign private, investment in LDCs is to raise the standard of living of its people so as to enable them move from economic stagnation to self-sustaining economic growth. He therefore concluded his study by recommending that foreign private investment should continue to rise till a certain level of income is reached in the undeveloped countries. The LDCs should also mobilize a level of capital formation sufficient to ensure adequate level of economic growth and development.

Kumar and Pradhan (2002) analyze the relationship between FDI, growth and domestic investment for a sample of 107 developing countries for the 1980-99 period. Their model uses flow of output as the dependent variable and domestic and foreign owned capital stock, labor, human skills capital stock and total factor productivity as their independent variables. Their results show that panel data estimations in a production function framework suggest a positive effect of FDI on growth and although FDI appears to crowd-out domestic investments in net terms, in general, some countries have had favourable effect of FDI on domestic investments in net terms suggesting a role for host country policies. Aitken and Harrison (1999) in testing if domestic firms benefit from direct foreign investment in Venezuela used panel data on Venezuelan plants, and found that foreign equity participation is positively correlated with plant productivity, but this relationship was only robust for small enterprises. They concluded that foreign investment negatively affects the productivity of domestically owned plants. The net impact of foreign investment, taking into account these two offsetting effects, is quite small. The gains from foreign investment appear to be entirely captured by joint ventures.

Borensztein *et al* (1998) in a study using panel data of 69 developing countries over two periods, 1970-79 and 1980-89 investigate the impact of FDI on growth. They used a basic estimating equation of growth in real GDP as the dependent variable, and *FDI*, measure of schooling and initial GDP as their independent variables. They find that FDI has a positive impact on growth but this

is only realized when *their measure of schooling* is above some critical level (estimated as 0.52); at low levels of their measure of schooling, FDI has a negative impact on growth confirming the complementarity of FDI and human capital in the process of diffusion.

Agosin and Mayer (2000) assessed the extent to which foreign direct investment in developing countries crowds in or crowds out domestic investment. Their model is run for three developing regions (Africa, Asia and Latin America) with panel data for the period 1970–1996 and the two sub-periods 1976–1985 and 1986–1996. Their model differed from previous models with the inclusion of lagged variables in the model (lagged FDI, lagged domestic investment and lagged growth rates). The results indicate that in Asia – but less so in Africa – there has been strong crowding in of domestic investment by FDI; by contrast, strong crowding out has been the norm in Latin America. The conclusion they reached was that the effects of FDI on domestic investment are by no means always favourable and that simplistic policies toward FDI are unlikely to be optimal. Assanie and Singleton (1999) studied the impact of FDI on economic growth in 67 developing countries. They find that while FDI has a positive impact on economic growth in middle-income countries (MICs), low-income countries (LICs) have not benefited from FDI flows.

Mohey-ud-din(2006) studied the impact of foreign capital flows on economic growth in Pakistan from 1975 to 2004 using GDP as the dependent variable and net inflow of FDI and ODA (Official Development Assistance and Official Aid) as the independent variable. Co-efficients of 61.4 for FDI and 22.7 for ODA showed a high positive impact of foreign capital inflows on the GDP growth in Pakistan during the period of 1975-2004. Weeks (2001) investigates the relationship between FDI and domestic investment: that foreign direct investment may ‘crowd-in’ or ‘crowd out’ domestic investors using 18 countries in Latin America. He incorporates real export growth and elasticity of domestic and foreign investment into his model and concludes that the stimulant effect foreign direct investment varies considerably across Latin American countries. This suggests that purposeful policy can increase the benefits of foreign investment inflows.

In Africa, Foreign private investment has been found to enhance economic growth although it crowds out domestic investment. Fedderke and Romm (2005) were concerned with the growth impact and the determinants of foreign direct investment in South Africa. Their estimation is in terms of a standard spillover

model of investment, and in terms of a new model of locational choice in FDI between domestic and foreign alternatives. They find complementarity of foreign and domestic capital in the long run, implying a positive technological spillover from foreign to domestic capital. While there is a crowd-out of domestic investment from foreign direct investment, this impact is restricted to the short run. Irandoust and Ericsson (2005) investigated the foreign aid, domestic saving, and economic growth relationships for a panel of African countries including Nigeria over the period 1965–2000. Using unit root and co-integration tests, the results revealed that the variables contain a panel unit root and they cointegrated in a panel perspective. The findings show that foreign aid and domestic saving enhance economic growth for all countries in the sample.

Gyapong and Karikari (1999) examined causal relationships between direct foreign investment (DFI) and economic performance in two Sub-Saharan African countries (Ghana and Ivory Coast), from the 1960s to 1980. Using correlation, causality, stationarity and cointegration tests, their results show that the impact of higher economic performance on DFI depends crucially on the strategy of the investment. Specifically, in Ivory Coast, a superior economic performance enhanced the inflow of export-oriented DFI; but, in Ghana, where DFI took the form of market-development in response to an import-substitution strategy, the effect is ambiguous. Obwona (2001) studied the impact of FDI on growth in Uganda. As expected, FDI impacted on growth positively though the coefficient was insignificant.

In the case of Nigeria, Ayashagba and Abachi (2002) carried empirical investigation on the effects of foreign direct investment on economic growth in Nigeria from 1980 to 1997. The result presented showed that foreign direct investment had significant impact on economic growth in Nigeria. They therefore concluded that the presence of foreign direct investment in the LDCs particularly in Nigeria is not totally useful. Akinlo (2004) also investigated the impact of foreign direct investment (FDI) on economic growth in Nigeria, for the period 1970–2001. The ECM results showed that both private capital and lagged foreign capital have small, and not a statistically significant effect, on the economic growth. The results seem to support the argument that extractive FDI might not be growth enhancing as much as manufacturing FDI. Obadan (2004) addressed the various issues associated with capital flows in both conceptual and empirical contexts. He posits that the desirability or otherwise of foreign capital depends on the use to which

such capital is put. Foreign capital, if channelled into productive uses, as against consumption, can be highly desirable, as it will bring about the much needed economic growth and development. Ayanwale and Bamire (2004) reported a positive and significant effect of FDI on firm's productivity of both domestic and foreign firms in the Nigerian Agro/agro allied sector.

### 3. METHODOLOGY AND EMPIRICAL RESULTS

#### 3.1 The Model

The methodology for this study was adapted with some modifications from Obwona, (2001).

Obwona's equation was derived from a neoclassical aggregate production function comprising exports. The model equation is stated as follows:

$$G_Y = \hat{a}_1 + \hat{a}_2 FDI + \hat{a}_3 GDS + \hat{a}_4 OCF + \hat{a}_5 EXGR + \hat{a}_6 AID + \mu$$

Where:  $G_Y$  = Annual growth rate of nominal GDP,

$FDI$  = Foreign Direct Investment,

$GDS$  = gross domestic savings as proportion of GDP,

$OCF$  = other capital inflows,

$EXGR$  = rate of growth of real exports,

$AID$  = net current transfers to government plus official long-term borrowing,

$\mu$  = disturbance term.

His reason for the inclusion of the export variable in the equation is that it is well documented in the literature that trade, especially exports, may increase competition, permit the realization of comparative advantage, enable countries to purchase goods from abroad, and provide opportunities to gain access to new technology as well as managerial skills. Thus, the export variable is expected to have a positive co-efficient. The coefficient of FDI denotes the impact of FDI on economic growth. According to modernization hypothesis, it should be positive. But dependency hypothesis would expect the coefficient FDI to be uncertain. The same follows for the AID and OCF variables. Finally, the variable GDS is standard

in a production function and as usual, the coefficient of GDS is expected to be positive.

In this study, some modifications were done. These modifications include that: The FDI, AID and OCF variables will be summed up to give Foreign Private Investment which is the subject of this study; The GDS variable will be replaced by Gross Fixed Capital Formation, since this is a better measure of domestic investment because not all the Gross Domestic Savings may be transformed into productive uses in investment; Rather than use GDS as a proportion of GDP we use growth rate of GFCF; and Export growth is replaced with net export growth for better results. Thus, the model equation for this study is stated as:

$$Yg = \alpha_0 + \alpha_1 FPI + \alpha_2 INVg + \alpha_3 NETXg + \mu$$

Where:  $Yg$  = Income growth measured by GDP growth rate.

$FPI$  = Foreign Private Investment

$INVg$  = Domestic Investment Growth rate

$NETXg$  = Growth rate of net exports.

$\alpha_0, \alpha_1, \alpha_2, \alpha_3$  = co-efficients

$\mu$  = error term.

The above equation was estimated using the Ordinary Least Square (OLS) method. And in doing this some test were carried out, this tests include unit root test, co-integration and error correction model analysis. Other diagnostic tools of analysis like the R- squared, statistical tests for significance (T and F tests) and Durbin Watson test were used to interpret the results. The software application utilised was E-views 5.1. Secondary data for the period 1970 to 2005 was used for the study and this was sourced through the publications of the Central bank of Nigeria, such as the Statistical Bulletin, the CBN's annual report and the Bullion.

## 3.2 Empirical Results

### 3.2.1 Augmented Dickey-Fuller (ADF) Test For Unit Root

The ADF test was done with the following hypothesis:

- Null hypothesis ( $H_0$ ): Variable contains unit root and hence is non-stationary.

- Alternative hypothesis ( $H_1$ ): Variable does not contain unit root and hence is stationary

The decision rule was that: If the calculated ADF Test statistic is greater than the MacKinnon critical values, reject the null hypothesis of non-stationarity and accept the alternative of stationarity, otherwise accept the null hypothesis of non-stationarity.

The results for the Augmented Dickey-Fuller Test for Unit Root (See appendix 1) is summarized as follows:

VARIABLE	ADF TEST STATISTIC	95% CRITICAL VALUE FOR THE ADF STATISTIC
GDP Growth (Yg)	-3.643288**	-2.9558
FPI	-1.850737	-2.9499
Investment growth (INVg)	-3.184728**	-2.9750
NETEXPORT growth (NETXG)	-3.052181**	-2.9527

\*\* Stationary at 5% level of Significance

These results show that growth rate of GDP (GDPG), growth rate of Foreign Private Investment, growth rate of Gross Fixed Capital Formation, and net export growth are stationary and Foreign Private investment is non-stationary at 5% level of significance. However, the fact that the variable FPI growth is stationary while FPI itself is not means that FPI is stationary after first difference  $\{I(1)\}$  while the other variables are stationary at level  $\{I(0)\}$ . Since there exists a non-stationary time series among our variables, we go further to carry out co-integration tests to ensure that though there is a non-stationary time series, the variables have a long-term or equilibrium between them i.e. the variables are co-integrated.

### 3.2.2 Co-Integration Tests

Theoretically, it is expected that a regression involving non-stationary time series may produce spurious results. Co-integration tests prove that the combination of stationary and non-stationary variables has a long-term relationship. In this study the Johansen Test for Co-integration and the ADF unit root test on the residuals were used.

The Johansen Test for Co-integration on all the variables in the series with no lag intervals showed four co-integrating equations (See Appendix 2), allowing us to conclude that the combination of the included variables are co-integrated.

While the ADF unit root test on the residuals works with the same decision rule as unit root test. For co-integration, it tests for unit root in the residuals obtained from the OLS regression of the model. The result shows that the ADF test statistic (-4.69) was greater than the 5% critical value (-2.98), in absolute terms (See Appendix 3). This implies that the residuals are stationary, leading us to conclude that the variables are co-integrated. Therefore, based on both tests, it can be concluded that the included variables are co-integrated. This implies that although there is the presence of one non-stationary time series among them (FPI), there is a long-run equilibrium relationship between them. Given this conclusion, a parsimonious error correction model can then be used to explain the relationship between the variables.

### 3.2.3 Parsimonious Error Correction Model

The original model is:

$$Yg = \alpha_0 + \alpha_1 FPI + \alpha_2 INVg + \alpha_3 NETXg + \mu$$

Where:  $Yg$  = Income growth measured by GDP growth rate.

$FPI$  = Foreign Private Investment

$INVg$  = Domestic Investment Growth rate

$NETXg$  = Growth rate of net exports.

$\alpha_0, \alpha_1, \alpha_2, \alpha_3$  = co-efficients

$\mu$  = error term.

Therefore the parsimonious error correction model is given as:

$$d(Yg) = \alpha_0 + \alpha_1 d(FPI) + \alpha_2 d(INVg) + \alpha_3 d(NETXg) + \alpha_4 \mu_{t-1} + \varepsilon$$

Where:  $d$  = first difference operator

$\mu_{t-1}$  = lagged residual

$\varepsilon$  = error term

The results of the above stated model (see appendix 4) is summarised as follows:

$$d(Y_g) = 0.304 + 0.00059d(FPI) + 0.3739d(INV_g) + 0.0338d(NETX_g) - 0.9643\mu_{t-1} + \varepsilon$$

t-stat	(0.087)	(2.899)**	(2.217)**	(2.895)**	(-4.145)**
R <sup>2</sup>	0.6977		F - statistic:	13.2693	
Adjusted R <sup>2</sup>	0.6451		DW - statistic:	1.7697	

The regression result above is in line with the a priori expectations that the independent variables of Foreign Private Investment (FPI), Growth rate of Gross Fixed Capital Formation (GFCF growth) and net export growth rate (NETEXPORTGROWTH) have positive impact on growth rate of Gross Domestic Product (GDPG). The constant term is given as 0.304. This implies that the model passes through 0.304 and if all the included variables are zero, the first difference of the growth rate of GDP will be 11.37. The coefficient of d(FPI) is 0.00059. This implies that there is a positive relationship between Foreign Private Investment and GDP growth rate in the short run such that a unit increase in Foreign Private Investment will bring about an increase of 0.00059 in the growth rate of GDP, all other variables being held constant.

The coefficient of d(INV<sub>g</sub>) is 0.3739. This implies that there is a positive relationship between growth rate of Domestic Investment (gross fixed capital formation) and GDP growth rate in the short run such that a unit increase in growth rate of gross fixed capital formation will increase the growth rate of GDP by 0.3739, all other variables being held constant. The coefficient of d(NETX<sub>g</sub>) is 0.0338. This implies that there is a positive relationship between growth rate of net exports and GDP growth rate in the short run such that a one- unit increase in growth rate of net exports will increase the growth rate of GDP by 0.0338, all other variables being held constant.

The co-efficient of  $\mu_{t-1}$  is  $-0.9643$ . This shows that there is a negative relationship between the growth rate of GDP and the equilibrium error term. This is in line with the a priori expectation. The results also show that 0.96 of the discrepancies in the variables are eliminated in the next time period. This confirms the long-run relationship between them.

The coefficient of determination ( $R^2$ ) from our results is given as 0.6977. This implies that 69.77% of the variations in the growth rate of the GDP of Nigeria are accounted for by the included explanatory variables of Foreign Private Investment, Growth rate of Gross Fixed Capital Formation and Net export growth. The adjusted coefficient of determination (adjusted  $R^2$ ) is given as 0.6451. This means that precisely 64.51% of the variations in the growth rate of the Gross Domestic Product of Nigeria are accounted for by the included variables, after the co-efficient of determination has been adjusted to make it insensitive to the number of included variables.

The statistical test for significance of the individual parameter estimates (i.e t-statistic) using 95% confidence interval and 23 degree of freedom ( $n - k = 28 - 5$ ) gives 1.708 from the statistical table. And since the calculated t-statistics of foreign private investment, growth rate of domestic investment, net export growth and the lagged error term are higher than the one from the table and the t-statistic of the constant term is lower than the one from the table, it can be concluded that foreign private investment, domestic investment, net export growth and lagged error term are significant in describing variations in the growth rate of the Gross Domestic Product in Nigeria and therefore cannot be ignored. The constant term however, is not significant and therefore its impact can be ignored in explaining variations in the growth rate of Gross Domestic Product in Nigeria.

Also the statistical test for joint significance of the parameter estimates (i.e. F-statistic) using 95% confidence interval and 4, 23 degree of freedom gives the figure 2.79 from the statistical table. And since the calculated f-statistics from our results gives 13.2693, which is higher than that from the table, we reject the null hypothesis and accept the alternative hypothesis, concluding that the joint influence of all included explanatory variables is significant and therefore cannot be ignored in explaining variations in growth of Gross Domestic Product in Nigeria. The calculated Durbin-Watson statistic from our results is 1.7697. Checking the statistical tables at 95% confidence interval gives a lower limit ( $dl$ ) of 1.104 and an upper limit ( $du$ ) of 1.747. Since the calculated statistic is higher than the upper limit, we conclude that there is no autocorrelation. This result is also consistent with the calculation of  $\hat{\epsilon}$  ( $DW = 2(1 - \hat{\epsilon})$ ) which gives 0.1151, implying that there is no auto correlation since its value is tending towards zero. This is in line with the assumption of non autocorrelation of the error terms in the ordinary least squares method of regression.

#### 4. CONCLUSION

Foreign Private Investment, which comprises Foreign Direct Investment (investment in real assets) and Foreign Portfolio Investment (investment in financial assets), augments domestic resources of any economy and enhances the economic development of the country. With current increased in-flow of foreign capital, Sub-Sahara African (SSA) countries including Nigeria are still characterized by low per-capita income, high unemployment rates and low and falling growth rates of GDP. This has stimulated a lot of arguments in the literature. This study therefore examined the issue of Foreign Private Investment and its impact on the Nigerian Economy. Among the findings was that Foreign Private Investment was non-stationary while the variables were jointly co-integrated. Also, Foreign Private Investment, Domestic Investment growth and Net Export growth were positively related to GDP growth rate. More so, the Foreign Private Investment, Domestic Investment growth, Net export growth and the lagged error term were statistically significant in explaining variations in the GDP of Nigeria.

Based on the above, it can be deduced that though the experience of other developing countries give contradicting reports on the effect of Foreign Private Investment, the Nigerian case is a bit different in that Foreign Private Investment has a positive significant effect on GDP growth rate of Nigeria. By implication issues on Foreign Private Investment should not be ignored in policy decisions aimed at promoting the economic development of Nigerian. Consequently, steps to attract more Foreign Private Investment should be undertaken by the Nigerian government as one of the ways of boosting the Nigerian economy.

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**APPENDIX 1 (UNIT ROOT TESTS)****GDP GROWTH RATE (Yg)**

ADF Test Statistic	-3.643288	1% Critical Value*	-3.6496
		5% Critical Value	-2.9558
		10% Critical Value	-2.6164

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\*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(YG)

Method: Least Squares

Date: 11/08/07 Time: 11:19

Sample(adjusted): 1973 2004

Included observations: 32 after adjusting endpoints

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
YG(-1)	-0.855352	0.234775	-3.643288	0.0010
D(YG(-1))	0.106719	0.188315	0.566707	0.5753
C	22.13923	7.633774	2.900169	0.0070

---

R-squared	0.390369	Mean dependent var	-0.100425
Adjusted R-squared	0.348325	S.D. dependent var	31.32149
S.E. of regression	25.28470	Akaike info criterion	9.387336
Sum squared resid	18540.17	Schwarz criterion	9.524749
Log likelihood	-147.1974	F-statistic	9.284869
Durbin-Watson stat	1.846555	Prob(F-statistic)	0.000765

---

**FOREIGN PRIVATE INVESTMENT (FPI)**

ADF Test Statistic	-1.850737	1% Critical Value*	-3.6353
		5% Critical Value	-2.9499
		10% Critical Value	-2.6133

---

\*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FPI)

Method: Least Squares

Date: 11/08/07 Time: 11:21

Sample(adjusted): 1972 2005

Included observations: 34 after adjusting endpoints

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
FPI(-1)	-0.383061	0.206977	-1.850737	0.0738
D(FPI(-1))	-0.519354	0.159062	-3.265093	0.0027
C	4253.362	2551.968	1.666699	0.1056

---

R-squared	0.555419	Mean dependent var	752.7676
Adjusted R-squared	0.526737	S.D. dependent var	16366.68
S.E. of regression	11259.32	Akaike info criterion	21.57988
Sum squared resid	3.93E+09	Schwarz criterion	21.71456
Log likelihood	-363.8579	F-statistic	19.36430
Durbin-Watson stat	2.355139	Prob(F-statistic)	0.000003

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**INVESTMENT GROWTH RATE (INVg)**

ADF Test Statistic	-3.184728	1% Critical Value*	-3.6959
		5% Critical Value	-2.9750
		10% Critical Value	-2.6265

\*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INVG)

Method: Least Squares

Date: 11/08/07 Time: 11:22

Sample(adjusted): 1978 2004

Included observations: 27 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INVG(-1)	-0.680965	0.213822	-3.184728	0.0040
D(INVG(-1))	0.187812	0.191301	0.981760	0.3360
C	12.86506	6.351131	2.025632	0.0541
R-squared	0.310789	Mean dependent var		-0.360602
Adjusted R-squared	0.253355	S.D. dependent var		28.27790
S.E. of regression	24.43454	Akaike info criterion		9.334312
Sum squared resid	14329.13	Schwarz criterion		9.478294
Log likelihood	-123.0132	F-statistic		5.411220
Durbin-Watson stat	1.955358	Prob(F-statistic)		0.011487

**NET EXPORT GROWTH RATE (NETXg)**

ADF Test Statistic	-3.052181	1% Critical Value*	-3.6422
		5% Critical Value	-2.9527
		10% Critical Value	-2.6148

\*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(NETXG)

Method: Least Squares

Date: 11/08/07 Time: 11:23

Sample(adjusted): 1973 2005

Included observations: 33 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NETXG(-1)	-0.762079	0.249683	-3.052181	0.0047
D(NETXG(-1))	-0.225993	0.178261	-1.267764	0.2146
C	34.00333	46.12194	0.737248	0.4667
R-squared	0.516836	Mean dependent var		1.402891
Adjusted R-squared	0.484625	S.D. dependent var		358.3260
S.E. of regression	257.2408	Akaike info criterion		14.02441
Sum squared resid	1985185.	Schwarz criterion		14.16046
Log likelihood	-228.4028	F-statistic		16.04538
Durbin-Watson stat	2.065495	Prob(F-statistic)		0.000018

**APPENDIX 2 (JOHANSEN'S COINTEGRATION TEST)**

Date: 10/29/07 Time: 23:56

Sample: 1970 2005

Included observations: 28

Test assumption:

Linear  
deterministic  
trend in the data

Series: YG FPI INVG NETXG

Lags interval: No lags

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.727829	87.36828	47.21	54.46	None **
0.601183	50.93120	29.68	35.65	At most 1 **
0.388181	25.19210	15.41	20.04	At most 2 **
0.335286	11.43516	3.76	6.65	At most 3 **

\*(\*\*) denotes rejection of the hypothesis at 5%(1%) significance level

L.R. test indicates 4 cointegrating equation(s) at 5% significance level

**APPENDIX 3 (ADF UNIT ROOT TEST ON RESIDUALS)**

ADF Test Statistic	-4.694451	1% Critical Value*	-3.6959
		5% Critical Value	-2.9750
		10% Critical Value	-2.6265

\*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RESID01)

Method: Least Squares

Date: 10/30/07 Time: 00:04

Sample(adjusted): 1978 2004

Included observations: 27 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01(-1)	-1.278154	0.272269	-4.694451	0.0001
D(RESID01(-1))	0.430019	0.204202	2.105856	0.0459
C	0.555098	3.257571	0.170402	0.8661
R-squared	0.512236	Mean dependent var		-0.903352
Adjusted R-squared	0.471589	S.D. dependent var		23.11016
S.E. of regression	16.79922	Akaike info criterion		8.584981
Sum squared resid	6773.127	Schwarz criterion		8.728962
Log likelihood	-112.8972	F-statistic		12.60206
Durbin-Watson stat	2.074153	Prob(F-statistic)		0.000181

**APPENDIX 4 (PARSIMONIOUS ERROR CORRECTION MODEL)**

Dependent Variable: D(YG)

Method: Least Squares

Date: 10/30/07 Time: 00:18

Sample(adjusted): 1977 2004

Included observations: 28 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.304468	3.493667	0.087149	0.9313
D(FPI)	0.000586	0.000202	2.898523	0.0081
D(INVG)	0.373851	0.168611	2.217242	0.0368
D(NETXG)	0.033790	0.011672	2.894898	0.0082
RESID01(-1)	-0.964309	0.232629	-4.145268	0.0004
R-squared	0.697676	Mean dependent var		-0.739468
Adjusted R-squared	0.645098	S.D. dependent var		30.73862
S.E. of regression	18.31212	Akaike info criterion		8.813436
Sum squared resid	7712.676	Schwarz criterion		9.051330
Log likelihood	-118.3881	F-statistic		13.26933
Durbin-Watson stat	1.769654	Prob(F-statistic)		0.000010



## THE IMPACT OF EUROPEAN UNION - SOUTH AFRICA TRADE DEVELOPMENT AND COOPERATION AGREEMENT ON BOTSWANA, LESOTHO, NAMIBIA AND SWAZILAND

Montseng TSOLO\*, Imogen Bonolo MOGOTSI\*\*, Gaotlhobogwe MOTLALENG\*\*\*

***Abstract:** This paper examines the impact of the European Union-South Africa Trade Development and Cooperation Agreement (EU-SA TDCA) on trade between the RSA and Botswana, Lesotho, Namibia and Swaziland (BLNS). The results indicate that demand for imports are income elastic and price inelastic. This implies that imported goods are necessary and consumers and producers of the BLNS countries depend on them. The results also indicate that the agreement between the RSA and the EU brought about increased imports to the BLNS countries. Demand for exports is also income elastic and price inelastic. The volume of exports to the RSA, from the BLNS, seems to increase following the agreement. The empirical findings imply first, that imports could have led to a crowding out of domestic production, which would negatively impact on domestic industry. Second, the EU-SA TDCA has benefited the BLNS countries by boosting their exports.*

**Keywords:** EU-SA TDCA; Customs Union; SACU; Trade; BNLN; RSA.

**JEL Classification:** F 10; 13; 15; 36 & 42

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## INTRODUCTION

A free trade agreement (FTA) is a preferential arrangement among countries in which tariff rates among them are reduced to zero. However, different members of the arrangement may set external tariff for non- members at different rates (Krueger, 1997). FTAs are designed to liberalize trade between economies as countries seek to open up opportunities for productive commercial partnerships and other forms of cooperation.

European Union-South Africa Trade Development and Cooperation Agreement (EU-SA TDCA) is the first reciprocal free trade agreement in Southern Africa and became fully implemented in the year 2004. The RSA signed a free trade agreement with the European Union in October 1999. The implementation date of the agreement was set for January 1<sup>st</sup> 2000 (Assarson, 2005).

This followed the completion of the ratification procedures by the EU member states and the RSA Parliament. The trade liberalization between the EU and the RSA is asymmetric in the sense that the liberalization period is different for the two parties. The RSA has 12 years to fully implement the agreement, while the EU has only 10 years. Furthermore, the RSA was to liberalize around 86% of its imports from the EU, while the respective figure for the EU is 95%. The EU-SA TDCA covers around 83% and 86.5% of South Africa's agriculture and industrial sectors, respectively, while for the EU, the corresponding figures are 61.4% and 99.98%.<sup>25</sup>

Although the EU-SA TDCA was signed between the EU and the RSA, it applies *de facto* to Botswana, Lesotho, Namibia and Swaziland (BLNS). The BLNS states are in the Southern Africa Custom Union (SACU) with the RSA. Therefore, by default, the BLNS countries have become party to the EU-SA TDCA with respect to imports from the EU. Although the BLNS states are not contracting parties to this free trade agreement, the porous nature of the BLNS borders implies that goods entering the RSA market under the free trade agreement could easily end up in the BLNS. Therefore, this makes BLNS countries the *de facto* members of the EU-SA TDCA.

Additionally, an important feature of the EU-SA TDCA is the implicit asymmetry of trade liberalization between the EU and the BLNS countries. Even though the EU-SA TDCA effectively grants the EU free access to the markets of the BLNS countries, it does not grant the BLNS countries reciprocal access to the

markets of the EU.<sup>26</sup> This poses immediate questions about the EU-SA TDCA effects upon the other members of the SACU of which the RSA is the dominant member. This agreement has had the potential to impact the BLNS countries in a number of ways. Firstly, impacts of the EU-SA TDCA are of a more dynamic nature in terms of increased imports and exports competition for the products. Secondly, this agreement has to lead to substantial reduction in the revenue that accrued to SACU common revenue pool, as a direct outcome of tariff reductions. So, reduction of the tariffs means the loss of revenue by the BLNS countries' governments. This is because the common external tariff that used to apply to the EU has been removed by the agreement. This paper, therefore, attempts to examine the impact of the EU-SA TDCA on the BLNS countries with the RSA. Specifically, it investigates if there has been any effect of the EU-SA TDCA on the trade of the BLNS countries with the RSA

The aim of this paper is to examine the possible impact of the EU-SA TDCA on the trade patterns between Republic of South Africa (RSA) and the BLNS countries. The paper proceeds as follows: Section 2 provides a brief history of SACU as well as the state of each country's bilateral trade with the RSA. Section 3 reviews the literature, while Section 4 discusses the methodological framework that the study uses for estimating the results. . Section 5 reports the estimation and analyses the results of the study. Lastly, conclusions are discussed in Section 6.

### **AN OVERVIEW OF REGIONAL ECONOMIES AND INTRA-SACU TRADE**

The RSA is the largest trading partner for the BLNS countries within the Southern African Customs Union (SACU). It is considered to be the biggest and the most developed economy in the region, hence essential for these countries. Thus, whatever effects accrue as a result of it forming the trade agreement with the EU is likely to affect BLNS states. The agreement between the EU and the RSA therefore raises concerns as to whether it will have any negative effects on the BLNS countries. For instance, the agreement may divert exports and imports of the RSA away from the BLNS countries to the EU. The BLNS countries are likely to face both import and export competition from the EU.

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<sup>25</sup> Source: ANNEX 4 South Africa, Trade Policy Review, WT/TPR/S/114/ZAF

<sup>26</sup> This assumes the rules of origin are effective

Since the agreement was signed, around 40% of the RSA's imports are sourced from the EU27. Due to intra-SACU free movements of goods it means that these imports will find their way into the BLNS countries. The problem encountered by the BLNS countries is that it may not be possible for them to formulate trade policies independently given the limited degree of freedom in tariff policies and the dominance of the RSA. Thus, domestic BLNS industries are likely to face competition of imports from the EU as prices from the EU are likely to be lower (a case of trade creation). This can result in local industries having to close down because they cannot compete with the lower prices of the EU exports. This can have a negative implication for the infant industries in the BLNS countries because of the heavier competition from the manufactured exports from industrialized nations of Europe. Thus, the enlarged market for the European goods can result in de-industrialization of the BLNS countries (Jachia and Teljeur (1999); Motlaleng (2004)).

Furthermore, since imports from the EU now enter the RSA at reduced tariffs, the implication is that SACU faces a significant amount of revenue reductions. SACU is based upon a common external tariff (CET) around all five members. This has been reduced because of the free trade agreement between the RSA and the EU. The common revenue pool for customs and excise receipts is expected to have shrunk, leaving lesser funds for distribution among the SACU members. The distribution of funds is made in such a way that smaller countries receive a large share of custom revenues as opposed to larger countries. This works in favour of the BLNS countries. Therefore, a fall in tariffs means these countries are the ones which are likely to be more negatively affected.

### **Brief History of SACU**

The Southern African Customs Union (SACU) dates back to June 29<sup>th</sup> 1910. This was when the RSA, Lesotho, Swaziland and Botswana signed an agreement at Potchefstroom in the RSA to enter into a customs union. Only Britain and the RSA were involved in the 1910 negotiations. This agreement lasted until the British Protectorates received independence in the mid 1960s. Thereafter, the agreement was re-negotiated by the newly independent states in 1969. The 1969 Agreement attracted widespread attention from economists and political commentators. It effectively ensured that throughout the sanctions period that the RSA faced, the

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<sup>27</sup> Source: South Africa Trade Statistics, 2007.

three frontline states (Botswana, Lesotho and Swaziland) continued to depend on the RSA for their imports and to a lesser extent their exports (Kirk *et al*, 2003). When Namibia attained its independence from South Africa in 1990 it also became a member of SACU.

The 1969 agreement included a revenue sharing formula for the division of customs and excise revenue collected in the union. The BLNS received a significant proportion of their government revenue through this formula. According to Flatters *et al* (2005), this revenue sharing formula specified BLNS entitlements to the total customs and excise duty collections, and the RSA received the residual amount. These BLNS entitlements meant that the smaller member states received their shares based on the total imports and excisable production independently of the actual revenue collections. As the residual claimant, the RSA absorbed all the revenue impacts of changes in imports of the other members. Against this background the smaller members of SACU expected that upon the formation of the first the RSA government of national unity in April 1994, negotiations would begin for a new reconstituted and democratized SACU. This culminated in a new agreement signed in 2002.

### **The new (2002) SACU Agreement**

The new agreement constituted a fundamental change. Unilateral dominance by the RSA was being replaced by a democratic dispensation. The essence of the new revenue formula is that the RSA no longer receives its share of revenue as the residual, but shares on the same basis as the BLNS countries. The extent to which the BNLS countries rely on SACU revenue sharing formula for a significant share of total budget revenue is shown in Table 10.

**Table 10** *SACU Revenue Payments under the current (2002) Revenue Sharing Formula, 2006*

	<b>SACU Payment (R million)</b>	<b>% of Revenue Pool</b>	<b>% of Total Government Revenue (excl. grants)</b>
Botswana	5,634	17.8	20.1
Lesotho	2,836	9.0	53.0
Namibia	5,463	17.3	41.0
Swaziland	3,708	11.7	56.9
RSA	17,625	55.8	3.9

Source: budget documentation from the five member states.

Table 10 shows how dependent the BLNS countries are on income from the SACU Revenue Pool. Lesotho, Namibia and Swaziland remain dependent on SACU revenue for between 40% to 50 % of their government revenue. Botswana is an exception to this as its dependency on SACU revenue is around 13% of the total government revenue. Moreover, the revenue share to each member is now calculated from the three basic components, which: are a share of custom component, a share of the excise component and a share of a development component. The custom component distributes the custom revenues on the basis that, a country that has a largest share of intra-SACU imports gets the highest custom revenue. The excise component distributes the revenues according to the share of a country's GDP, while the development component adjust the shares of excise pool according to the inverse of each country's GDP per capita. The existence of this current revenue arrangement does not benefit the RSA, as opposed to the old sharing formula. This is because it no longer receives its share of revenue as the residual claimant, but shares on the same basis as other member countries.

### **Intra-Regional Trade**

The SACU region is dominated by the RSA, which accounts for 87% of the population, and 93% of the GDP of the customs area (World Bank, 2000). While the RSA has developed a significant manufacturing and industrial capacity, the other countries remain dependent on agriculture and mineral extraction. Due to their different economic development agendas, the RSA and the BLNS countries pursue different industrialization strategies. Thus, while the RSA wants to protect its capital intensive industries, such as automotive industry, this is not in the best interest of the BLNS countries. They would like to benefit from cheaper inputs and consumer goods. In terms of trade, the BLNS countries depend heavily on the RSA for a significant proportion of their trade, investment and in some cases (migrant) employment. They source most of their imports from the RSA, although their exports are more geographically diverse. The commodity pattern of the RSA's exports to the BLNS differs significantly from its exports to the rest of the world. Whereas the RSA continues to export predominantly resource-based goods overall, the BLNS represent a significant market for the RSA's consumer goods and services (Kirk *et al*, 2003).

The BLNS economies and their trade with the RSA can be considered as follows. With regard to Swaziland, agriculture forms the backbone of its economic activity. Growth in Swaziland manufacturing output picked up in 2007 following the positive performance of some export commodities. These, include sugar, sugar-based products, wood-pulp and timber products, meat and meat products, soft drinks concentrates, citrus and zippers. Also, the stronger than anticipated economic performance by the RSA in 2007 boosted Swaziland's export demand. This is because 50% of the country's exports are destined for the RSA (CBS Annual Report, 2007/2008). In 2007, imports from the RSA amounted to 92%, while exports to the RSA accounted for 62% of Swaziland's exports. (CBS, Quarterly Review, 2008).<sup>28</sup>

In the case of Namibia, over 70% of its imports originate in the RSA. Also, many Namibian exports are destined for the RSA market or transit that country. Specifically, in 2007, imports sourced from and exports to the RSA amounted to 78.1% and 29%, respectively (BoN factsheet, 2007). Namibia's exports consist mainly of diamonds and other minerals, fish products, beef and meat products, grapes and light manufactures. The country's main imports are food and live animals, oil and chemical products, aircraft and ship products, and mineral products.

A similar situation is found for the Botswana's economy: the country's trade relationship is highly concentrated in a limited number of countries. The RSA is the largest supplier of imports. Botswana's imports are predominantly vehicles and transport equipment, machinery and electrical equipments, beverages and tobacco, metal and metal products. In terms of direction of trade, imports of the country amounted to P24.9 billion in 2007. Out of these, imports from CCA (mainly RSA) amounted to P20.9 billion, thus constituting 84% of total imports of Botswana (CSO, 2007). On the other hand, The RSA is not the major destination of Botswana's exports. Only 11% of Botswana's exports went to CCA during that period. Diamonds are the major export commodity of Botswana. They constitute about 62% of the total exports. These are destined for the United States and Japan.

The economy of Lesotho is based on subsistence farming and animal husbandry. There is also small-scale industries that include clothing, footwear, textiles, food processing and construction. Lesotho's imports are sourced from the RSA, which completely surrounds the country. These include various items used

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<sup>28</sup> Emalangenzi is pegged 1:1 to South Africa's rand

for immediate consumption, especially food items. About 82% of Lesotho imports originate from the SACU region, but largely reflects imports from the RSA. Lesotho's imports from the RSA have experienced a growth rate of 21.7% during the periods 1999-2003. On the other hand, export growth to the RSA was 17.1% for the same period. From the above, it is noticeable that the BNLS countries depend on the RSA for their imports, and to a lesser extent exports, in particular, non-traditional exports.

### **REVIEW OF PREVIOUS STUDIES**

When countries enter into a free trade agreement, changes in trade flows arise due to changed conditions of competition. Viner (1950) classified these processes as trade creation and trade diversion. In his classical consideration, when a developing country enters into an FTA with an industrialized country, trade diversion effects are likely to dominate in the third countries due to complementary production and trade structures. This is due to the fact that third countries export predominantly primary and low skilled, labour intensive goods, while the import is dominated by high-skilled, capital intensive commodities. However, this theory was criticized on the basis that developing countries would benefit from an FTA with an industrialized country due to their different factor endowment. This would then enable developing countries to import cheap, capital-intensive goods and export labour intensive manufactures, thus, stimulating division of labour. Also, it might help them to develop their industrial capacities due to protected access to a larger market provided it is strong (Meyn, 2003).

Some authors postulate that a free trade agreement is likely to affect partners differently. Finger *et al* (1979) and later Pomfret (1986) argued that one of the determining factors is the extent of trade overlapping between the signatory and the remaining non-signatory partners. The overlapping should be measured, however, separately for imports and exports. In most cases, it appears that FTAs lead to both trade diversion and creation with the net effects determined by the structure of the FTA. Therefore, even if two or more countries are moving toward freer trade among themselves the FTA could make those countries and the world as a whole worse off. This can arise if the FTA diverts more trade than it creates, according to economic theory. This conclusion is called the General Theory of the Second Best (Cooper, 2005).

There is substantial empirical review on the estimation of FTA effects. Much of this uses econometric methods including gravity and analytical models, together with the general equilibrium models. A study by Neyapti *et al* (2003) estimated import and export functions of Turkey with the EU and non-EU countries using panel data set. The study investigated whether the custom union between the EU and Turkey affected Turkey's trade. The findings indicated that both exports and imports of Turkey had been positively affected by the custom union. They were also sensitive to income and price changes. However, the responsiveness of Turkey's trade to income and price changes differed for trade with the EU and non-EU group of countries. For the EU countries, Turkey's income elasticity of both imports and exports were lower as compared to the non-EU countries, especially for the custom union period. The effect of exchange rate on exports was found to be stronger for the custom union period. This situation was explained by the increased imports during the period of largely overvalued Turkish Lira (TL), especially for the period 1993-2000. For imports, real appreciation of TL, has had a positive impact on imports especially for the EU countries, though not in the custom union period.

Another study on EU-SA FTA was undertaken by Assarson (2005) where he investigated the impact the agreement had on the RSA's trade with Southern Africa and the rest of the world. He used trade statistics for the periods 1999-2004 between the RSA and its trading partners to symbolize trade before and after the implementation of the agreement. In this way, the study could easily compare and discover possible changes in the trade patterns since the agreement was implemented. The study showed that the RSA has increased both its exports to and imports from almost all countries, although exports to the BLNS countries declined. The RSA's exports to these countries had been sporadic so it was difficult to state if the negative trend was a result of the EU-SA FTA or not. However, the study argued that these countries had been negatively affected by the agreement when considering the negative percentage changes in RSA's exports during the period 1999-2004.

## METHODOLOGY

This study adopts the methodology used by Neyapti *et al* (2003) on Turkey to estimate the impact of EU-SA TDCA on the BNLS countries. They investigated whether custom union between the EU and Turkey affected Turkey's trade. This paper however, uses different variables of demand for exports and imports of the BLNS countries.

Several hypotheses about the import and export demand have been tested by the empirical studies reviewed. The two variables or determinants remained central, income and price effects. This is due to the fact that policy makers are often concerned with the magnitude of these effects because of their macroeconomic impact (Cedepa, 2002).<sup>29</sup> According to Mervar (1993), the conventional model for estimating export demand equation suggests the following relation:

$$EX = g(Y(f), p(ex), p(f)) \quad (1)$$

Where:  $EX$  stands for quantity of exports,

$Y(f)$  = income of the importing region (+)

$p(ex)$  = price of the exported good's own price (-)

$p(f)$  = price of imperfect substitutes on the foreign market (+)

and signs in parentheses represent the respective hypotheses.

Equation 1 can be linearized and expressed as follows:

$$EX = \alpha_1 + \alpha_2 Y(f) + \alpha_3 p(ex) + \alpha_4 p(f) + \mu \quad (2)$$

Traditional aggregate demand function for imports is, therefore, represented by the following relation:

$$IM = f(Y(d), p(d), p(im)) \quad (3)$$

Where:  $IM$  represents quantity of imports,

$Y(d)$  = income of the importing (domestic) country (+)

$p(d)$  = price of the imperfect substitutes on the domestic market (+)

$p(im)$  = price of the imported good (-)

The linear function of the above model is specified as follows:

$$IM = \beta_1 + \beta_2 Y(d) + \beta_3 p(im) + \beta_4 p(d) + \varepsilon \quad (4)$$

Although the above approach has been predominant in the empirical literature, it has remained controversial. This is due to the fact that prices of

<sup>29</sup> Fundamental assumption underlying the imperfect substitute model is that neither imports, nor

exports/imports and domestic prices are expected to be correlated. Due to this limitation, some studies such as those by Khan (1974) used the relative prices, which are expected to eliminate any multi-collinearity problems that might arise due to correlation between these variables. However, the use of relative prices has also posed some problems. Specially, when dealing with bilateral trade. Bahmani-Oskooee and Goswani (2004) argued that when considering bilateral trade, import and export prices are not available on bilateral basis to be included in export and import demand functions. This is an important issue due to the fact that a country exports and imports different commodities to different trading partners. The remedy here is to consider exports and imports value, and try to determine how sensitive they are to a change in exchange rate. This is a direct method of determining whether currency depreciation is effective in increasing or decreasing trade with the trading partner. Thus, the country's exports and imports functions, in value can be re-written as follows:

$$\log IM = \beta_1 + \beta_2 \log Y(d) + \beta_3 \log RER + \mu \quad (7)$$

$$\log EX = \alpha_1 + \alpha_2 \log Y(f) + \alpha_3 \log RER + \varepsilon \quad (8)$$

Where:  $RER$  = Real bilateral exchange rate and is calculated as follows:

$$RER = e * p_i / p_j$$

$e$  = domestic currency per country  $i$ 's currency

$p_i$  = price level of country  $i$

$p_j$  = price level of the domestic country

According to Doroodian *et al* (1994), the log-linear formulation for these demand functions is deemed to be more appropriate than the linear one. This is due to the fact that the parameter estimates can be directly interpreted as elasticities without further computations

The model shown above (equations 7 and 8) is what the paper adopts for analyzing the impact of EU-SA TDCA on BLNS countries. It is similar to the methodology used by Neyapti *et al* (2003). They used both import and export demand functions to determine whether Turkey's trade had been affected by the European Union Agreement. Their analysis involved more than 150 EU and non-

EU countries who are Turkey's trading partners. Their study covered the period between 1980 and 2001, yielding an unbalanced panel data set comprised of 2000 observations. Their estimated model is as follows:

$$\ln MT_{it} = \alpha_{0i} + \alpha_1 \ln gdp_t + \alpha_2 \ln(rer)_{it} + \alpha_3 (deu * cu)_{it} \quad (9)$$

$$\ln XT_{it} = \beta_{0i} + \beta_1 \ln(gdp)_{it} + \beta_2 \ln(rer)_{it} + \beta_3 \ln(deu * cu)_{it} \quad (10)$$

Where:  $MT_{it}$  = imports of Turkey from country i at time t

$XT_{it}$  = exports of Turkey to country i at time t

$gdp$  = GDP for country i at time t

$rer$  = real bilateral exchange rate

T = Turkey

$\ln$  = natural logarithm function

$deu$  = dummy for EU countries, which assumes the value 1 for EU country and 0 otherwise.

$cu$  = dummy for custom union, which assumes the value 1 for the period of CU and 0 otherwise.

$deu * cu$  = is the interactive dummy between the EU and custom union

The same methodology above is used, where both exports and imports functions of the BLNS countries are estimated. The idea is to investigate whether this agreement has affected the structure of trade of the BLNS countries with the RSA. The imports demand function estimated is as follows:

$$\ln MT_{it} = \alpha_{0i} + \alpha_1 \ln(gdp)_{it} + \alpha_2 \ln(rer)_{it} + \alpha_3 (d2000)_{it} + v_{it} \quad (11)$$

Where:

$MT_{it}$  = imports into country i (BLNS country) from the RSA

$gdp$  = GDP for country i at time t

$rer$  = real bilateral exchange rate

$d2000$  = Dummy variable that takes the value one (1) for the period of EU-SA TDCA Zero (0) otherwise

$\ln$  = natural logarithm function

$v_{it}$  = disturbance term

$\alpha_{0i}$  = individual specific effects. These refer to unobservable individual specific effects which are not included in the equation because we do not know exactly how to specify them explicitly. Also, they do not have data on them, but we simply want to acknowledge their existence.

The export demand function estimated is as follows:

$$\ln X_{it} = \beta_{0i} + \beta_1 \ln \text{gdpSA} + \beta_2 \ln(\text{rer})_{it} + \beta_3 (\text{deu} * \text{cu})_{it} + \varepsilon_{it} \quad (12)$$

Where:  $X_{it}$  = country  $i$  exports to South Africa

$\text{gdpSA}$  = GDP for South Africa

### Estimation techniques for the time series-cross sectional data analysis

The model used for analysis is the time series-cross sectional (TSCS) data model. This model analyses data observed across countries or firms in which the number of cross-sectional units is relatively smaller than the number of time periods (Greene, 2003). Time series-cross sectional data set for economic research possesses several major advantages over conventional time-series or cross-sectional data. These advantages, according to Baltagi (1995) and Hsiao (1985) include controlling for individual heterogeneity, more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency.

In estimating the model, this paper first starts by estimating the pooled ordinary least squares (POLS) model. This is a method whereby all cross sections are pooled together and then treated as one regression model. Although this model is not complicated, its estimators are likely to create complications in our estimation. According to Podesta (2000), OLS regression estimates are likely to be biased, inefficient and/or inconsistent when they are applied to pooled data. This is because errors for regression equations estimated from pooled data using OLS procedure and pooled data tend to generate certain complications. These include serial correlation, contemporaneous correlation and heteroscedasticity. Errors might also be non random across spatial and/or temporal unit because parameters are heterogeneous across subsets of units (Hicks, 1994). Thus, estimating constant-coefficient models cannot capture the causal heterogeneity across space and time.

In order to take some of these issues into consideration, the test for the Hausman is done to solve the problem of heterogeneity. As has been shown, omitting to test if the countries are heterogeneous or not could lead to problems such as heteroscedasticity and autocorrelation. Therefore by testing for either fixed effects or random effects model helps us in a way to get rid of such problems.

### ESTIMATION AND EMPIRICAL RESULTS

This section presents the results of time series-cross sectional data. This is in order to assess the impact of the EU-SA TDCA on the BLNS countries. The paper uses time series-cross sectional data set that comprises of four BLNS countries. It covers the period 1990 to 2006, in order to analyze the import and export demand functions. Firstly, the pooled regression model is run with the assumption of heterogeneity being ruled out. This is likely to bring about biased results should heterogeneity exit and also if the error term does not behave as expected. To take into account the heterogeneity across countries, Hausman test is done in order to determine whether the appropriate model to use is the fixed or random effects model.

#### Hausman test for presence of fixed effects

The hausman test is a useful device for determining the preferred specification of the common effects model. That is, it is a general test procedure that determines whether there is any correlation between the regressors and the individual specific effects. Should the regressors be uncorrelated with the error terms, random effects model is the appropriate model. On the other hand if, the regressors are correlated with the error terms then fixed effects model is the correct model. From Table 11, the test shows random effects model to be the appropriate model for both exports and imports.

**Table 11** Hausman Test

Imports				Exports			
Test summary	chi-square statistic	Chi-square d.f	prob.	test summary	chi-square statistic	Chi-square d.f	Prob.
cross-section	2.27	3	0.519	cross-section	2.17	3	0.998

To illustrate the potential of inconsistencies arising from the use of the pooled model, we select the pooled ordinary least squares (POLS) estimation to allow for comparison with results of time series-cross sectional random effects model estimators. The time series-cross sectional model presented accounts for cross-sectional heteroscedasticity and contemporaneous correlation that may arise among the explanatory variables. Since the appropriate model was found to be random effects model, the approach that is used for random effects estimation is the generalized two-stage least squares.

### Import function

Table 12 presents the regression results of demand for imports using both the pooled regression and the time series-cross sectional random effects model. When static pooled model is used, the coefficient of real exchange rate (RER) is not statistically significant while GDP is only significant at 10% level. Again, the results show presence of autocorrelation since the DW-statistic is less than 2. This is an indication that the errors are serially correlated. However, for the time series-cross sectional random effects model all coefficients become significant determinants of the demand for imports by the BLNS countries. There is no autocorrelation. These different results confirm the presence of biases and thus the inconsistencies linked to using static pooled data models. These inconsistencies may be due to the fact that POLS generate certain complications brought about by the error term.

**Table 12** *Regression results of demand for imports using both the pooled regression and the time series-cross sectional random effects model*

Pooled			TSCS(REM)		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
log(GDP)	0.35	1.79(0.08)*	log(GDP)	1.61	3.42(0.00)***
log(RER)	-0.45	-1.22(0.23)	log(RER)	-0.87	-2.51 (0.00)***
Dum	1.53	5.04(0.00)***	Dum	0.95	4.31(0.00)***
R-square=0.41, Adj. R-square= 0.31			R-square= 0.64, Adj. R-square= 0.62		
F-statistic= 15.13(0.00)			F-statistic= 37.07 (0.00)		
DW-statistic= 0.29			DW-statistic= 2.1		

\*\*\* indicates significance level at 1%, \*\* indicates significance level at 5%, \*indicates significance level at 10%

The demand for imports is found to be price inelastic meaning that imports are not sensitive to price changes. This behavior could mean that commodities

imported by the BLNS countries are necessary commodities, whose demand may not be highly influenced by price changes. This implies that they may not have domestic substituting goods. Even if they have domestic substituting commodities, production domestically may be inefficient or there may be preferences for imports over domestic substitutes, so people resort to imports. While imports seem to be price inelastic, they are income elastic, which seems to reinforce the argument above that the BLNS countries are heavily dependent on imports from RSA.

Finally the dummy variable for the establishment of the EU-SA TDCA is found to be statistically significant and positive. It shows that the agreement between the RSA and the EU brought about trade creation to the BLNS countries. Trade has been created because commodities are now imported cheaply from the relatively low cost producer, the EU. Goods entering the RSA can easily find their way into the BLNS countries because of the porous nature of trade in the region.<sup>30</sup> It could also mean that domestic production (within the BLNS) has been replaced by more competitive EU products.

The results above could mean trade diversion if the EU is not relatively the lower cost producer. i.e., if the RSA previously imported from other lower cost countries but the FTA makes duty free imports cheaper. This increases imports although the EU is not the lowest cost producer. The EU could still be more expensive than other suppliers. Thus, trade is being diverted from the least cost producer to the EU.

The increase in imports could mean that the agreement has harmed domestic production. Importing from the RSA is now cheaper as compared to buying domestically and as such domestic production is stifled. i.e., demand shifts from locally produced goods to foreign ones. This would then result in local industries having to close down since they would not compete with the lower prices from the RSA. Imports from the RSA would be crowding out domestic production.

**Table 13** *Export Function*

<b>pooled</b>			<b>TSCS (REM)</b>		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
log(GDP <sub>SA</sub> )	1.32	0.63(0.53)	Dlog(GDP <sub>SA</sub> )	7.53	2.59(0.01)**
log(RER)	0.81	1.72(0.09)*	log(RER)	0.67	2.04(0.04)**

<sup>30</sup> There are no trade barriers between South Africa and the BLNS countries because of the fact that these countries are in the same custom union (SACU). The implication is that any goods entering South Africa will find their way into the BLNS countries due to free movements of goods and services between these countries.

pooled			TSCS (REM)		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
Dum	1.30	2.23(0.03)**	Dum	1.41	9.37(0.00)***
R-square= 0.41, Adj. R-square= 0.39			R-square= 0.61, Adj. R-square= 0.58		
F-statistic= 15.13 (0.00)			F-statistic= 30.5 (0.00)		
DW-statistic= 0.58			DW-statistic= 2.06		

\*\*\* indicates significance level at 1%, \*\* indicates significance level at 5%, \* indicates significance level at 10%

As with the import function, the TSCS (REM) results in Table 13 are considered consistent for the export function, and hence these are the ones discussed and analyzed. The results show that all variables are statistically significant and their coefficients yield expected signs. The variable GDPSA, which measures national income of the RSA is found statistically significant at 5% level. It depicts that a unit increase in GDPSA increases the demand for exports of the BLNS countries into the RSA. Furthermore, the demand for exports is income elastic. i.e., the demand for exports is sensitive to changes in income of the RSA. That is, not only does the demand for exports to the RSA increase with RSA's GDP, but it increases more than proportionately which means the RSA highly depends on exports of the BLNS countries. This means that exports become more competitive as they compete with the RSA products. Thus, increase in exports to the RSA as her income increases implies that domestic production within the BNLS countries is boosted by any increase in economic activity in the RSA. This may lead to increase in employment of the BLNS.

This paper also depicts that a depreciation of the domestic currency makes exports cheaper. Thus, the RSA will import more from the BLNS countries due to the fall in price of exports of those countries. For LNS countries, this variable captures only the relative CPIs with the RSA. It means when prices rise less in those countries as opposed to the RSA, the volume of exports to the RSA increase. This implies that exports of the BLNS countries to the RSA become more competitive as they compete with the RSA's commodities. The reason is most likely that BLNS commodities exported to the RSA do not have any substituting goods in the RSA. It could also be interpreted to mean that the RSA's consumers and producers prefer exported goods of the BLNS countries as opposed to the local products.

The demand for exports is price inelastic. For Botswana, whose currency is not at par with the rand, this implies that the exchange rate fluctuation is of less influence in determining the demand for exports to the RSA. For the LNS countries, on the other hand, this implies that any changes in prices of commodities in the LNS countries do not change much the demand for exports to the RSA.

Finally the dummy variable indicates that the agreement has brought about increase in demand for exports from the BLNS countries. This increase can be interpreted to mean that the RSA has a wider market now as a result of the agreement. It fulfills it by buying more commodities from the BLNS countries. The RSA is facing an increased demand for exports to the EU, so in an attempt to fulfill that demand, it imports more from its trading partners (the BLNS countries) either to export to the EU as they are or after further processing. Thus the agreement can be said to have benefited the BLNS countries since they can now export more to the RSA. Hence, this has impacted positively on their economies.

### CONCLUSIONS

This study examined the impact of the European Union-South Africa Trade Development and Cooperation Agreement (EU-SA TDCA) on trade patterns between the RSA and Botswana, Lesotho, Namibia and Swaziland (BLNS). The investigation is carried out using pooled time series-cross sectional data for the periods 1990-2006. The random effects model is the method of analysis adopted. The findings show that demand for imports by the BNLS countries is income elastic and price inelastic, which implies that the BNLS countries import necessities from the RSA. The dummy variable for imports function is positive and statistically significant, This implies that the agreement between the RSA and the EU brought about increased imports to the BLNS countries. Additionally, demand for exports is income elastic and price inelastic. The dummy variable for exports function is correctly signed and significant. This suggests that the volume of exports to the RSA, from the BLNS increased after the agreement. The implications of these findings are as follows. First, imports could have led to a crowding out of domestic production, as a result of the SA-TDCA. Also, the EU-SA TDCA could have benefited the BLNS countries by increasing their exports.

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## **MICROSTRUCTURE AND MARKET MAKER PRICE STRATEGIES: STUDY OF A TUNISIAN MARKET MAKER ACTIVITY**

Saida GTIFA

***Abstract:** This paper provides evidence on market making behaviour of FX dealer in the Tunisian FX. It uses a complete data set that includes intra-day trades for the euro and US dollar. The sample period is 1 January 2007 to 31 December 2007. The results are consistent with the findings of the literature that used trades and inventories data. I find evidence that customer order flow has information effect on USD/TND. However, I do not find evidence that customer order flow has information effect on EUR/TND. Moreover, inter-dealer order flow has a positive effect on the market maker price strategy. I also find that the central bank intervention has positive and significant effect on dealer's behaviour and price formation process. My study also suggests that dealer is risk aversion and his quotes flows the references quotes tendency.*

***Keywords:** exchange rate, order flow, microstructure, trading*

***JEL codes:** F31, F33, G15*

### **INTRODUCTION**

Foreign exchange market (FX) is a decentralized dealership market, where transactions pass to dealer for execution and dealer posts bid and ask in response to trading initiatives. In the FX market there is two markets an inter-dealer market in which dealers trade with each other and a customer market in which customer trade with dealers. Indeed, dealer quotes bid and ask prices in both markets and for each transaction. Accordingly, the FX market characterized by short tem price movements these movements can not be explained by macroeconomic fundamentals, Meese and Rogoff (1983). A number of studies on the

microstructure of foreign exchange markets have looked at this issue, Lyons (1995, 1996, 1997), Yao (1998), and Bjønnes and Rime (2000). The issue is important because its implications of the analyses of market stability and relationship with risk at short term. But little research looked for how microstructure factors affect price strategy and dealer behaviour.

Although, the order flow is a major source of private information, this private information is significant for price formation process and consequently for the dealer behaviour. Among all different types of order flow, dealer's customer order flow is the most important one because it is the major source of private information, Lyons (1995) and Yao (1998). Hence, dealers with access to large customer transactions are expected to be better informed about exchange rate fluctuations Yao (1998), Cheung and Wong (2000) and Cheung and Chinn (2001).

I empirically study three related questions concerning the importance of information factors, risk aversion, control inventory and central bank intervention: First, how type of order flow influence price strategies. Second, how control inventory affects price formation process. Third, how central bank intervention influences dealer behaviour?

I use a new data set to study the price strategies and market making behaviour of one dealer in the Tunisian FX market. The data set covers two exchange rates EUR/TND and USD/TND over the period from 1 January 2007 to 31 December 2007. Since I have all the information on each trade of my market maker, I can test dealer's price strategies. In particular, I study dealer's control inventory, order flow and central bank intervention impacts.

The most important study of dealer's behaviour and his price formation process is Lyons (1995), Yao (1998) and Bjønnes and Rime (2000). Lyons represents the first attempt to use trade and currency inventory data. However, Lyons has not used data for customer market. In contrast, Yao use a complete trade data and he finds that customer trades are the important source of private information and moreover he derives the majority of his trading profits from such customer trades. Empirically, I collect a new data set comprising the complete trades of a market maker and the central bank intervention to test the model's theoretical findings. This complete data set allows me to examine dealer's behaviour and price formation process.

To rest of the paper is structured as follows: section 1 presents a theoretical model, section 2 provides features statistics, section 3 provides empirical evidence, and finally, section 4 concludes the paper.

**THE THEORETICAL MODEL**

In general, the prices deviate to their anticipated value, because of the effect of microstructure factors (undesired position, private information and transaction cost) Yao (1998). The Madhavan and Smidt (1991) model shows that the price is linearly related to the level of stock inventory:

$$P_{it} = \mu_{it} - \gamma(I_{it} - I_i^*) + \Psi D_t \tag{1}$$

Where  $\mu_{it}$  is the dealer  $i$ 's expectation of the fundamental value  $\tilde{m}_t$  of the currency at time  $t$ ,

$I_{it}$  is the inventory currency of the dealer  $i$ ,

$I_i^*$  is the desired inventory level, and

$\gamma \neq 0$  is the parameter measuring the inventory effect.

$D_t$  is an indicator variable which takes value +1 for dealer  $j$ 's purchase and -1 for he's sale.

The constant  $\gamma \neq 0$  represents the transaction cost (the presence of transaction cost implies a positive spread),  $\psi D_t$  measures the spread. Then, the dealer  $J$  always buys at dealer  $i$ 's ask and sells at dealer  $i$ 's bid.

During each period, the dealer chooses the optimal trading volume  $Q_t$ , to take account to his liquidity and his private information. The dealer uses the Bayes rule to extract the information conducted by  $Q_t$  and to form his expected future trade. The process of price formation can be written as:

$$\Delta P_t = \beta_0 + \beta_1 Q_t + \beta_2 I_t + \beta_3 I_{t-1} + \beta_4 D_t + \beta_5 D_{t-1} + \varepsilon_t \tag{2}$$

Where  $\varepsilon_t$  represents public information,

$Q_t$  represents the Net order flow addressed by the dealer  $J$  to the market maker  $i$ ,

$I$  is the inventory currency,

$D_t$  is the indicator variable previously defined, which takes value +1 for the buy order and value -1 for a sale order.

Madhavan and Smidt (1991) show the importance of information effect explained by  $\beta_1$ . However, they show that the effect of the inventory is equal to zero  $\beta_2 = \beta_3 = 0$ . This model was used by Lyons (1995), he divided  $Q_t$  into direct transactions and others carried out by brokers, and he used asymmetry information model and the inventory control model.

However, using the data of Lyons, Romeu (2001) announces that the two effects appear after structural cuts for the sample period. Bjonnes and Rime (2001) divided  $Q_i$  into interbank transactions and customer transactions. They found that customer transactions affect the dealer profit, but they haven't any effect on the currency inventory.

### **The database**

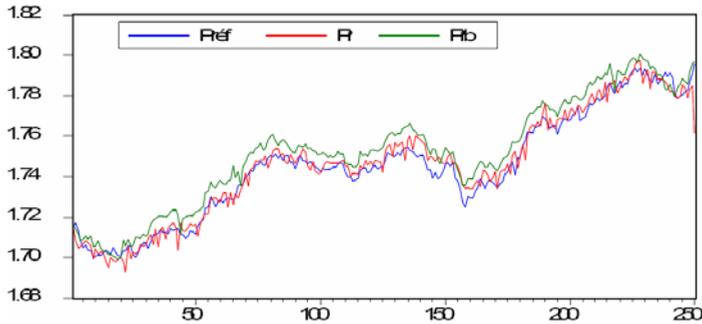
The data set used in this study consists of complete spot trades of EUR/TND and USD/TND of one important dealer in Tunisian foreign exchange market during 252 days (until January 2nd, 2007 to December 31st, 2007). My dealer's bank is one of the most active market maker in Tunisian FX market, with a substantial customer order flow. His average daily volume is approximately 5770460.43 euro million and of 4708297.64 USD million, which is considered one of the four important market dealers. The data set is similar to that in Yao (1998). It includes the transaction prices, the trading quantities and dealer inventories over the sample period.

The most significant importance of my data set is that I use the inter-dealer transactions and customer transactions. In fact, Yao (1998) shows that the customer transactions are considered important because they represent the major source of the asymmetric information and because they generate part of the dealer profit. In this study, the customer transactions account for 45% of the trade volume. This explains the importance of inter-dealer transactions, which account for only 3% of the transaction number carried out by my dealer, but they account for 55% of the trade volume.

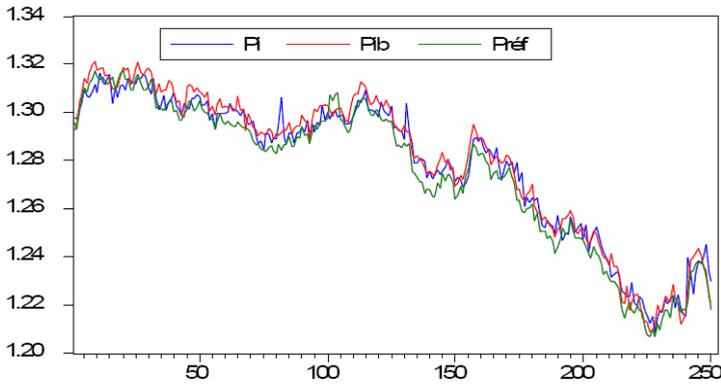
## **GENERAL FEATURES OF VARIABLES**

### **Exchange rate**

The comparison of the market maker exchange rates and the references exchange rates communicate by the Central Bank of Tunisia (CBT) shows that quotes of my market maker follow official quotes. In fact, the market maker is risk aversion because the CBT does not announce his intention to buy or to sell currencies. The graphs summarize the weak difference between the dealer quotes ( $P_i$ ), inter-dealer quotes ( $P_{ib}$ ) and reference quotes of the CBT ( $P_{ref}$ ).



**Graph 1** EUR/TND exchange rate



**Graph 2** USD/TND Exchange rate

The graphs report that market maker quotes, as well as inter-dealer market average quotes follow the central bank reference quotes. The difference between market maker quotes and the CBT ones is about 0.071 and 0.33 on average, respectively for EUR/TND and USD/TND. Observing the graphs I note that the CBT follows a real depreciation policy of the TND (Tunisian Dinar) against the euro, and a real appreciation of the TND against the USD.

Of course, these results would deserve to be thorough by including the effect of the microstructure variables on the market maker intra-day activity in particular on the exchange rates evolution and currency inventory, as well as the currency inventory exchange rates fluctuations influence the market maker behaviour. In fact, before testing these variables I test the exchange rate stationarity. Then, for each data set of foreign exchange rates, I distinguish two different prices practice by the market maker: The price  $P_i$  to which inter-dealer transactions are carried out and the price  $P_j$  applied for customer trades.

Augmented Dickey-Fuller tests suggest that the two foreign exchange rate series present a unit root in level, and are stationary in first differences. These results are conforming to the literature, such as the results of Lyons (1995) and Galati (2000). The only ambiguous result could relate to the rate EUR/TND, to which the customer transactions are carried out, it is stationary in level.

**Table 14** *Augmented Dickey-Fuller test*

	EUR/TND		USD/TND	
	Pi	Pj	Pi	Pj
Level	-1,177813	-3.714827***	-0,373289	-0.147591
First difference	-8,749343***	-11.87343***	-8,144946***	-8.644894***

Acceptance of  $H_0$  (stationary): \*\*\* to 1%, \*\* to 5%, \* to 10%.

Table 14 summarizes the behaviour of the market maker spot exchange rates. Foreign exchange rate USD/TND made the average of 1.2781 TND to US dollar for the inter-dealer transactions, and of 1.2769 for the customer transactions, and it reached a high level of 1.3164 and 1.3155 respectively for the two types of transactions, then the general tendency is the appreciation of the TND against US dollar during the sample period. Whereas, EUR/TND made the average of 1.7456 and 1.742 respectively for the two types of transactions, and reached its high level 1.7972 and 1.7941. Then I note percentage depreciation of 8% for TND against the euro over the sample period. The movements of USD/TND are generally characterized by short periods of relative stability. Moreover, on average the exchange rate of inter-dealer market is slightly higher than the exchange rates in customer market, however the bid-ask spread in customer market is higher than bid-ask spread in inter-dealer market.

**Table 15** *Summary statistics of exchange rates*

	EUR/TND				USD/TND			
	Pi	$\Delta P_i$	Pj	$\Delta P_j$	Pi	$\Delta P_i$	Pj	$\Delta P_j$
Mean	1.7456	0.0002	1.7422	0.0002	1.2781	-0.0003	1.2769	-0.0003
Median	1.7470	0.0003	1.7429	-8.9E-05	1.2894	-0.0004	1.2883	-0.0003
Max	1.7972	0.0649	1.7941	0.4462	1.3164	0.0246	1.3155	0.0297
Min	1.6683	-0.0712	1.6896	-0.4440	1.2081	-0.0167	1.2098	-0.0257
Std dev	0.0267	0.0086	0.0261	0.0534	0.0296	0.0046	0.0295	0.0052
Skeweness	-0.1652	-0.7717	-0,0633	0.0339	-0.8004	0.3197	-0.8166	0.4541
Kurtosis	2.4381	35.8602	2.2427	61.004	2.3790	6.3339	2.4171	11.677
Jarque-Bera	4.4269	11227.5	6.1154	34906.7	30.710	119.56	31.202	789.78

**Order flow**

In this study, order flow is measured by the difference between purchases and sales orders.

The purchases orders are affected by a sign (+) and the sales orders are affected by a sign (-).

Given that the absence of information for hour of execution transactions, I calculate the sum of daily customer order flow and daily inter-dealer order flow. I use Augmented Dickey-Fuller test. The null assumption that order flow has a unit root could be rejected. The series of order flow is stationary.

**Table 16** *Augmented Dickey-Fuller tests*

	$D_i$	$D_j$	$Q_i$	$Q_j$
EUR/TND	-4.489617	-6.732645	-6.882884	-6.801821
USD/TND	-4.576455	-7.560175	-5.908941	-6.684418

The summary statistics for the order flow series are summarized in tables 4. The order flow average is different from zero for the two currencies. Whereas, the market maker specifies that the desired position  $I^*$  is null at the end of the day. However, I use the inter-dealers transactions and customer transactions. In addition, as it is advanced in Yao (1998), the series of order flow customers present a source of asymmetric information.

**Table 17** *Summary statistics of order flow*

	EUR/TND		USD/TND	
	$Q_i$	$Q_j$	$Q_i$	$Q_j$
Moyenne	2131381.	382515.0	1031032.	-1316227.
Médiane	1000000.	484809.0	417164.9	-403493.2
Maximum	1.21E+08	5748355.	32917000	3266448.
Minimum	-8655170	-42040726	-8663000	-11669984
Ecart-type	8362910.	3246537	3536640	2224256.
Skeweness	12.61561	-9.770256	4.280023	-1.717308
Kurtosis	179.2856	128.7209	36.31763	6.199511
Jarque-Bera	302596.9	154456.5	10009.08	186.3663

The series of order flow is stationary they can be decomposed into an expected component and unexpected component. I use the analysis of Box-Jenkins to find the best autoregressive model in order to avoid the problem of multicollinearity between orders flow and the currency inventories. Indeed, I use

the expected component, calculated from the residues of the autoregressive model. In fact, I use the criteria of Akaike information (AIC) and Schwarz (SC) to find the autoregressive model order:

$$Q_t = \alpha + \varphi(L)Q_t + \varepsilon_t \quad (3)$$

Where,  $\varepsilon_t$  is error term and L is the lag operator.

### Currency inventories

The currency inventory is calculated at the end of each day. Indeed, I suppose that my market maker currency inventory is null at the beginning of the sample period. I take account of the effect of customer orders on the market maker strategies. Thus, the currency inventory is calculated as a currency inventory at moment  $t-1$  increased (decreased) by the purchases (sales) currency with the other customer (banking and non banking customer).

**Table 18** Augmented Ducky-Fuller test of currency inventories

$I_t$	EUR/TND	USD/TND
	-8.103652***	-7.923773***

stationary: \*\*\* to 1%, \*\* to 5%, \* to 10%.

The stationary of the stock inventory shows that it always turns over towards its average. This implies that the market maker adopts a daily control inventory strategy to avoid the inventory cost. I can check the strategy of control inventory by estimating the variation of the stock inventory at time  $t$  according to the stock inventory at time  $t-1$  :

$$\Delta I_t = c + \beta I_{t-1} + \varepsilon_t \quad (4)$$

**Table 19** Return towards the average inventory

	EUR/TND	USD/TND
$\beta$	-0.003774 (-1.012691)	-0.002607 (-0.667341)

The estimation of stock inventory variation shows that my market maker stock inventory always turns over towards its average. The coefficient  $\beta$  for the two parities is negative and close to 3%. In other term, 3% of the deviation in stock inventory at time  $t-1$  is eliminated in  $t$ .

Table 20 reports the summary statistics of the currency inventory of my market maker. I find that the average of the daily inventory is different from zero.

One explanation is that the market maker carries out arbitrage operations to get rid of the undesired stock at the end of exchange day.

**Table 20** Summary statistics

<i>It</i>	EUR/TND	USD/TND
Mean	3.11E+08	-88278719
Medan	3.33E+08	-92599043
Max	5.79E+08	24984003
Min	-3711657.	-1.95E+08
Std dev	1.48E+08	60982140
Skeweness	-0.395209	0.083256
Kurtosis	2.429242	1.984303
Jarque-Bera	9.861691	10.99092

## EMPIRICAL EVIDENCE

My objective is to estimate price strategies of the market maker for two parities. Our methodology here is similar to that in Lyons (1995) and Yao (1998).

### Methodology

I use the generalized method of moments (GMM) of Hansen (1982) to estimate the price strategies of my market maker. GMM has several important advantages that make it particularly suitable in this study. First, the GMM does not require an assumption of normality. In the estimate of the price strategies, the big number of the observations makes normality as not a good assumption. Second, Newey and West (1987) show that the variance-covariance matrix used in procedure GMM can be adjusted to treat the heteroskedasticity and the autocorrelation. Consider the estimation equation (2), where the error term represents the sum of the public signals between two successive transactions. Assuming that public signal occurs at all trade periods and the number of trades between two successive trade days is random. In conclusion, GMM was used in other empirical studies, such as Bessembinder (1994) and Madhavan and Smidt (1993). In addition, following Bessembinder the results in this study show that the instrumental variables set is identical to independent variables set. However, I correct the standard errors for the heteroskedasticity and the autocorrelation using the method of Newey and West (1987).

### Empirical results

The objective is to estimate the price strategy model and inventory control of my market maker. First, I start with estimation of the basic model, and then I

decompose the order flow into several indicating variables, according to the transaction counterparts. Therefore, I integrate the variation of reference rate of central bank. I estimate the model of the equation (2). The results show a strong negative autocorrelation of the residues:

$$\Delta P_{it} = \beta_0 + \beta_1 Q_{it} + \beta_2 I_{it} + \beta_3 I_{i,t-1} + \beta_4 D_t + \beta_5 D_{t-1} + \varepsilon_t$$

Table 21 reports the GMM estimation results of the price strategies. In fact, the model for the estimation is similar to those in Lyons (1995) and Yao (1998) on FX and others such as Glosten and Harris (1988) and Madhavan and Smidt (1991) on the stock markets.

I have several noteworthy results. First, the coefficient of the order flow  $\beta_1$  reflecting the informational effects is negative and insignificant. This show that my market maker does not increase its bid-ask spread following the adverse selection resulting from private information. On the other hand, the coefficients  $\beta_2$  and  $\beta_3$  which are related to inventory control effects have the right signs for EUR/TND, but these signs are not validated for USD/TND. Overall, and according to Yao (1998), the dataset of USD/TND provides very weak evidence that quote is the best tools to control the stock inventory of the market maker. This is consistent with several works on FX, such as Yao (1998) and on the stock market, such as Madhavan and Smidt (1991). Madhavan and Smidt (1991) suggest that the statistically weak finding may result from the estimation of standard errors, due to multicollinearity between the transactions and the stock inventory. Moreover, the coefficients  $\beta_4$  and  $\beta_5$ , reflecting the transaction costs, haven't the right signs for EUR/TND. On the other hand, the sign of  $\beta_5$  for USD/TND is consistent with the result of Yao (1998).

**Table 21** Estimate price strategy by the model of Madhavan and Smidt

Variables	EUR	USD
C	0.006867 (0.875467)	-0.000585 (-0.135353)
$Q_{jt}$	-1.00E-10 (-0.056217)	-4.52E-10 (-0.127915)
$I_t$	-2.97E-10 (-0.183221)	9.08E-10 (0.345725)
$I_{t-1}$	2.93E-10 (0.180745)	-9.08E-10

Variables	EUR	USD
		(-0.353312)
$D_t$	-4.63E-05 (-0.708699)	-4.30E-05 (-0.295335)
$D_{t-1}$	2.23E-05 (1.021228)	-8.12E-06 (-0.366320)

We carry out to estimate the model by dividing orders flow into several indicating variables, according to the transaction counterparts. Then, I decompose the orders into  $Q_{jc}$  orders with customers,  $Q_{jb}$  orders with other dealers and  $Q_{jbct}$  orders with the central bank (which can advance signals on the future exchange policy and future monetary policy of the central bank). Indeed, the equation is the following:

$$\Delta P_{it} = \beta_0 + \beta_1 Q_{jbct} + \beta_1 Q_{jb} + \beta_1 Q_{jc} + \beta_2 I_{it} + \beta_3 I_{it-1} + \beta_4 D_t + \beta_5 D_{t-1} + \varepsilon_t$$

Table 22 reports the results of estimate GMM of the price strategy according to the various participant orders. Then, the majority of the coefficients kept their signs for the two currencies. The coefficient of central bank order flow is positive for EUR/TND and negative for USD/TND. This means that the intervention of the central bank has a positive effect on the market maker price strategy. In addition, the central bank order flow is a source of information for the future evolution of the EUR/TND. Order flow of other dealers has a positive effect for the two currencies. This shows that my market maker quote follows inter-dealer market quote and the central bank reference quote. The coefficient of customer order flow is positive for the dollar and negative for euro. Indeed, the customer order flow is the source of private information, it provides the strong tool for generate profit from dollar trades.

**Table 22** Estimation the model of Madhavan and Smidt by dividing orders flow into several indicating variables

Variables	EUR	USD
C	-0.026116 (-0.067187)	0.004761 (0.123640)
$Q_{jbct}$	2.39E-08 (1.982689)	-2.95E-09 (-0.028183)
$Q_{jt}$	1.63E-09 (0.095044)	2.32E-09 (0.269777)

Variables	EUR	USD
$Q_{jc}$	-1.96E-08 (-0.078678)	5.94E-10 (0.138311)
$I_t$	2.61E-09 (0.073550)	3.56E-09 (0.218781)
$I_{t-1}$	-2.50E-09 (-0.073353)	-3.50E-09 (-0.219291)
$D_t$	-1.60E-05 (-0.037118)	6.49E-05 (0.207380)
$D_{t-1}$	-3.43E-05 (-0.064915)	1.20E-05 (0.120882)

Then, I try to analyze the central bank intervention effect on my market maker quote. The Central Bank of Tunisia intervenes indirectly, each morning, by transmission of reference quote for each currency to inter-dealer market. This rate indicates the intention of central bank intervention. Indeed, the CBT intervention is secret, since each morning the CBT transmits an ask reference rate and bid reference rate without announcing its purchase and sale intention. Overall, the reference rate indicates information about fundamentals variables (monetary policy and exchange policy).

Indeed, the model can be written as follows:

$$\Delta P_{it} = \beta_0 + \beta_1 Q_{it} + \beta_2 I_{it} + \beta_3 I_{i,t-1} + \beta_4 D_{it} + \beta_5 D_{i,t-1} + \beta_6 \Delta Pr ef_{it} + \varepsilon_t$$

The coefficient  $\beta_1$  is positive for the EUR/TND, which shows that order flow has an informational effect, particularly after my market maker receives the CBT reference rate. Then, the market maker selects the euro transactions following information that he deduces from the intervention rate. However, the coefficient  $\beta_1$  is negative for USD/TND. The coefficients  $\beta_2$  and  $\beta_3$  that are related to control inventory have the right signs for the two parities. This means, following the reception of the CBT reference rate, my market maker acts on his stock inventory to adjust his quote. In this respect, I can conclude that the reference rate is a tool for inventory control of the market maker. The coefficient  $\beta_6$  is positive for the two currencies. This shows that market maker is a risk aversion and he follows the reference rate to determine his intra-day quote, in order to minimize the risk of excessive volatility.

**Table 23** Estimate the model by taking account of the CBT intervention

Variables	EUR	USD
$C$	0.134919 (0.158068)	-0.212405 (-0.012329)
$Q_{jt}$	6.10E-09 (0.116437)	-7.44E-08 (-0.012306)
$I_t$	-2.26E-08 (-0.156901)	-3.17E-08 (-0.012239)
$I_{t-1}$	2.26E-08 (0.156913)	2.86E-08 (0.012231)
$D_t$	-0.000619 (-0.153699)	-0.009492 (-0.012290)
$D_{t-1}$	3.54E-05 (0.098621)	-0.002364 (-0.012247)
$\Delta Pr_{ef}$	52.44645 (2.772310)	233.1683 (2.699132)

## CONCLUSION

This paper has tried to provide contribution to microstructure approach by investigating the empirical relationship between quote strategy, customer order flow, inter-dealer order flow, currency inventory and central bank intervention. The model views the dealer as risk aversion agent who adjusts his quote by flowing reference quote and selects trades. Until now, most of the research in this area has related in inter-dealer market data set, since data on customer market were not easily available. This paper uses a new data set that includes intra-day data on trading volumes, currency inventory and intra-day quotes in two markets (customer market and inter-dealer market).

An important result is that inventory control has a positive effect in price strategy of EUR/TND it provides strong evidence that quote is the best tool to control the euro stock inventory. But I find a little evidence of inventory effect on USD/TND rate. I also find that inter-dealer order flow has a significant effect in quoted prices of EUR/TND and USD/TND. This is consistent with the findings of the literature in Lyons (1995) and Yao (1998). They show that order flow effects quoted prices. The dealer in this study has substantial customer order flow and he practices a larger spread for such transactions. Indeed, these transactions are the major source of trading profit of the dealer in particular for dollar trades. Since customer transactions represent a source of asymmetric information because of low transparency of such trades. But dealers can deduce information from inter-dealer

trades in particular with development of electronic system such information can be free to dealers requesting quotes.

Evidence from regression suggests that the central bank intervention has a positive effect in quoted prices of my dealer and the difference between quotes of the CBT and those of the dealer is very weak on average. This indicates that my market maker is risk aversion, he flows CBT reference rate and inter-dealer market rate to determine his intra-day quotes.

Although the article throws some light on the impact of degree of risk aversion, information factors and currency inventory on a dealer's quoting behaviour, it also highlights areas for further research. This study involves one individual dealer and two currency pair. Determining whether the results apply to other dealers and others currencies deserves further work.

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## CASE STUDY

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## MEASURING PUSH, PULL AND PERSONAL FACTORS AFFECTING TURNOVER INTENTION: A CASE OF UNIVERSITY TEACHERS IN PAKISTAN

Iqtidar ALI SHAH\*, Zainab FAKHR\*\*, M. Shakil AHMAD\*\*\*, Khalid ZAMAN\*\*\*\*

***Abstract:** It has been observed that professional and qualified teacher's retention become a challenge for Higher Education Institutions (HEIs) in Pakistan as the turnover rate has been significantly increased in recent years. The main objective of this paper is to access personal, push and pull factors and to find out that which factors contribute more to turnover intention. Primary data were collected from 100 teachers of 5 HEIs using questionnaire methods. The results indicate that all factors (personal, pull and push) have contributed in the employees' turnover intentions. However, some facets of personal factor have significantly contributed in turnover intentions.*

***Keywords:** Turnover, Higher Education Institution, Job Quit, Personal Factors, Push Factors, Pull Factors*

***Jel Codes:** J63*

### 1. INTRODUCTION

Employees' turnover is a well-recognized issue of critical importance to the organizations. For example, in 1995, the average monthly resignation rates were

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3.4%, 2.9%, and 2.7% in Singapore, South Korea, and Taiwan, respectively (Barnard and Rodgers, 1998). Lack of employees' continuity involves high costs in the induction and training of new staff. Organizational productivity is also one of the challenges that arise as a consequence of turnover (Siong et al, 2006). In case of higher educational institutions, the cost of employees' turnover is higher as human resources with knowledge and competences are the key assets and it affects the academic and research activities of the organizations. Quitting in the mid of semester, the affect is very high as it is difficult for both the university to arrange the substitute and student to adjust/accept new faculty in the mid of course. Employee's turnover is a widely researched phenomenon. A huge amount of theoretical and empirical literature identified various factors/reasons responsible for employees' turnover. However, there is no standard reason why people leave organization (Ongori, 2007).

In the last decade, the higher education sector in Pakistan has gone through many fundamental changes. The Higher Education Commission was established as University Grant Commission was less effective in promoting higher education. The government funds for the promotion of higher education has been increased as a result the number of higher education institutions (public and private) has been increased. It has been observed that professional and qualified teacher's retention become a challenge for higher education institutions in Pakistan as the turnover rate has been significantly increased in recent years. According to Ali (2008) lecturers' turnover in private colleges at Pakistan is more than 60% on average.

In this paper an effort has been made to find out and understand various personal, pull and push factors and their relationship which contribute in the intention of universities teachers to quit a job.

The purpose of this paper is to find out the intentions of employees to quit a job by taking a case of university teachers in Pakistan. More specifically to find out that which factors is more significantly contributing in the intentions of employees to quit job.

The manuscript is organized in 6 parts/sections. After introduction in section 1 (above), literature review is presented in section 2. Section 3 provides theoretical framework followed by methodology in section 4. Result and discussion is carried out in section 5. Paper concludes in section 6.

## 2. LITERATURE REVIEW

The importance of employee's retention and cost of employees' quitting is well known in the literature. Quitting of an employee means quitting of tacit knowledge and loss of social capital. Turnover increased operation cost and cost on induction and training (Ongori, 2007 and Amah, 2009).

The available literature indicated various factors that why employees quit job. There is also much discussion on the relationship between various factors and turnover. For example, Mobley's (1977) study focused on the relationship between job satisfaction and turnover. Mohammad (2006) worked on the relationship between organization commitment and turnover. Another study to show the relationship between work satisfaction, stress, and turnover in the Singapore workplace was conducted by Tan and Tiong (2006). A study on the relationship between adverse working condition and turnover is carried out by Böckerman and Ilmakunnas (2007). Rahman, Naqvi and Ramay (2008) carried out a study in Pakistan to find out the relationship between Job satisfaction, organizational commitment, perceived alternative job opportunities and turnover intention. Steijn and Voet (2009) also showed the relationship between supervisor and employee attitude in their study. A research was conducted in China to show the relationship between job satisfaction, organizational commitment or career commitment by Zhou, Long and Wang (2009).

The results of each study were different as each study was carried out in different countries (having different socio-economic and culture), in different setting, for different organizations and used different independent variables. Review of various research studies indicated that employees resign for a variety of reasons, these can be classified into the following:

**2.1 Demographic Factors:** Various studies focus on the demographic factors to see turnover across the age, marital status, gender, number of children, education, experience, employment tenure.

**2.2 Personal Factors:** Personal factors such as health problem, family related issues, children education and social status contributes in turnover intentions. However, very little amount of empirical research work is available on personal related factors. There is another important variable "Job-Hoping" also contributes in turnover intentions. When there is a labor shortage, employees have plenty of jobs available. Consequently, they can afford to switch jobs for a few extra dollars. Many employees are believed to job-hop for no reason or even for

fun. For example, an employee changes his or her job because some of his or her friends or relatives have done so. Employees may job-hop over trivial things such as a dislike for the hairstyle of the boss. Or, if an employee faces a minor problem (e.g., minor disagreement with the boss or other colleagues), he or she may simply resign (Debrah, 1993:1994). Unrealistic expectation of employee is also an important personal factor which contributes in turnover. Many people keep unrealistic expectations from organization when they join. When these unrealistic expectations are not realized, the worker becomes disappointed and they quit. One of the personal factors which have been missed in many research studies is the inability of employee to follow organizations timings, rules, regulations, and requirement, as a result they resign. Masahudu (2008) has identified another important variables “employers’ geographic location” that may determine turnover. The closeness of employees to their families and significant others may be a reason to look elsewhere for opportunities or stay with their current employers. For instance, two families living and working across two time zones may decide to look for opportunities closer to each other.

**2.3 Push Factors / Controlled Factors:** Push factors are aspects that push the employee towards the exit door. In the literature it is also called controlled factors because these factors are internal and can be controlled by organizations. According to Loquercio (2006) it is relatively rare for people to leave jobs in which they are happy, even when offered higher pay elsewhere. Most staff has a preference for stability. However, some time employees are 'pushed' due to dissatisfaction in their present jobs to seek alternative employment. On the basis of available literature, push factor can be classified into:

**2.3.1 Organizational Factors:** There are many factors which are attached with an organization and work as push factors for employees to quit. Among them which are derived from various studies are: salary, benefits and facilities; size of organization (the number of staff in the organization); location of the organization (small or big city); nature and kind of organization; stability of organization; communication system in organization; management practice and polices; employees’ empowerment. There is another push variable called organizational justice. According to Folger & Greenberg (1985), organizational justice means fairness in the workplace. There are two forms of organizational justice: distributive justice, which describes the fairness of the outcomes an employee

receives; and procedural justice, which describes the fairness of the procedures used to determine those outcomes.

*2.3.2 Attitude Factors:* In the literature, attitude is another kind of push factor which is mostly attach with employee behavior. Attitude factors are further classified into job satisfaction and job stress.

Job satisfaction is a collection of positive and/or negative feelings that an individual holds towards his or her job. Satisfied employees are less likely to quit. Job satisfaction is further divided into extrinsic factors and intrinsic factors. Extrinsic factors include variables such as job security, physical conditions/working environment, fringe benefits, and pay. Intrinsic factors include variables such as recognition, freedom, position advancement, learning opportunities, nature, and kind of job and social status (workers with a high hierarchical position who link their social position with their job want to retain it).

Job stress includes variables such as role ambiguity (e.g. my job responsibilities are not clear to me), role conflict (e.g. to satisfy some people at my job, I have to upset others), work-overload (e.g. it seems to me that I have more work at my job than I can handle) and work-family conflicts (e.g. my work makes me too tired to enjoy family life).

*2.3.2 Organizational Commitment:* There are many factors which are attached with employee and organization and work as push factors for employee to quit. Organizations are interested in not only finding high performing employees, but those who will be committed to the organization. Similarly employees are also interested to work in an organization which is committed to pursue their carriers and benefits. Organizational commitment is recognized as a key factor in the employment relationship and it is widely accepted that strengthening employment commitment, reduce turnover (Mohammad, 2006). Johns (1996) defines organizational commitment as “an attitude that reflects the strength of the linkage between an employee and an organization.” Ugboro (2006) identified three types of organizational commitment: affective, continuance and normative, detail of which is given below:

- Affective commitment is employee emotional attachment to the organization. It results from and is induced by an individual and organizational value congruency. It is almost natural for the individual to become emotionally attached to and enjoy continuing membership in the organization.
- Continuance commitment is willingness of employee to remain in an organization because of personal investment in the form of nontransferable

investments such as close working relationships with coworkers, retirement investments and career investments, acquired job skills which are unique to a particular organization, years of employment in a particular organization, involvement in the community in which the employer is located, and other benefits that make it too costly for one to leave and seek employment elsewhere.

- Normative commitment is induced by a feeling of obligation to remain with an organization.

According to Ongori (2007), organizational commitment is an affective response to the whole organization and the degree of attachment or loyalty employees feel towards the organization.

**2.3.3 Pull Factors (Uncontrolled Factors):** Pull factors are those reasons that attract the employee to a new place of work. In some papers pull factors are named as uncontrolled factors because it is out of the control of organizations. Various pull factors derived from literature are: high salary, career advancement, new challenge and interesting work, job security, good location of company, better culture, life-work balance, more freedom/autonomy, well reputation of organization, vales, more benefits, good boss.

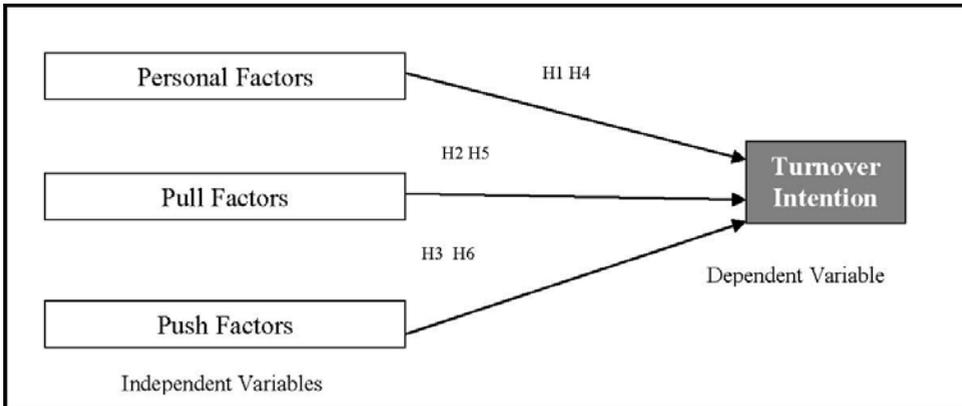
### **3. THEORETICAL FRAMEWORK**

This research study has three independent variables namely personal factors, pull factors and push factors and one dependant variable i.e. turnover intention The purpose of the study (as mentioned above) is to find out the relationship between independent variables and dependent variable. Moreover, to see to what extent personal, pull and push factors contributes in the employees' turnover intention in the HEIs of Pakistan and which factor contribute significantly. .

The following hypothesis were tested in this study

- H1: There is relationship between personal factors and turnover intentions
- H2: There is relationship between pull factors and turnover intentions
- H3: There is relationship between push factors and turnover intentions
- H4: Personal factors will have significant contribution in turnover intentions
- H5: Pull factors will have significant contribution in turnover intentions
- H6: Push factors will have significant contribution in turnover intentions.

Following model (Figure 19) depicts the relationship among the independent and dependant variables, forming the theoretical framework.



**Figure 19** *Theoretical Framework*

#### 4. METHODOLOGY

**4.1 Data Collection:** Data were collected from 100 teachers of 5 Higher Education Institutions of Pakistan (COMSATS Institute of Information Technology, Abbottabad, Hazara University, University of Engineering and Technology, Abbottabad Campus, Post Graduate College Abbottabad, and COMWAVE College, Abbottabad) using questionnaire methods. In questionnaire each statements was measured using a 1-5 Likert Scale with a rating of 1 indicating “Strongly Disagree” and a rating of 5 indicating “Strongly Agree.” The questionnaire was divided into 5 Parts. Part A contains questions regarding sociodemographic factors of the teachers, Part B personal factors, Part C pull factors, Part D push factors, and Part E questions regarding intentions of teachers to quit job.

**4.2 Study Sample:** Total 75 questionnaires were distributed in COMSATS Institute of Information Technology, Abbottabad, out of which 51 were received. Similarly, 30 questionnaires were circulated in Hazara University, out of which 23 were returned back. Questionnaires sent to University of Engineering and Technology, Abbottabad campus were 15, out of which 17 were received. 30 questionnaires were distributed among the faculty of Post Graduate College Abbottabad, out of which 16 were received. Lastly out of 10 questionnaires circulated in COMWAVE College, 3 were returned back. Thus, total sample questioners received and used in this study were 100.

**4.3 Variables Used:** The following variables were used in this study:

*4.3.1 Dependent Variable:* Turnover intentions, the dependent variable of the study, were assessed using two statements. The statements in the instrument measure the probability of university teachers' intention to leave the organization with the following statements: 1) "As soon as I can find a better job, I will quit at this organization"; 2) "I often think about quitting my job". Each statement is represented with 5 points Likert Scale to indicate their intention of leaving the organization in the near or distant future. A higher score indicates a higher intention to leave the organization.

*4.3.2 Independent Variables:* Personal, pull and push factors are the independent variables in the study. Personal, pull and push factors were measured using five points Likert Scale from strongly disagree to strongly agree. Personal factors were consisted of 12 questions, pull factor 15 questions, and push factor having 19 questions.

*4.3.3 Statistical Methods:* Correlation was used to find out the relationship between dependent variable (Turnover Intentions) and independent Variables (Personal, Push and Pull Factors). In other words, correlation was used to test hypothesis H1, H2, and H3. Regression analysis was conducted on the data to find out how much personal push, and pull variables contribute in turnover intention. In other words to test hypothesis H4, H5 and H6 regression model was used.

## 5. RESULTS AND DISCUSSION

### 5.1 Respondents' Profile:

Total 5 HEIs were selected randomly for data collection. Data were collected from 100 teachers of HEIs using questionnaire method. Out of 100 participants, 67% were females and 33% were males, 79% were married and 21% were unmarried. The qualifications of participants were PhD (9.0%), MS/Mphil (60%), and Master (31.0%). The positions of respondents were Lecturer (79%), Assistant Professor (20%), and Professor (1%). Out of 100 participants, 10% belong to age group of 25-30 years, 82% to age group of 31-40, 7% to age group of 41-50 years and 1% to age group of 50-above. Out of 100 respondents, 34% having no children, 22% having children between 1-3, 33% having children between 4-6, and 11% having children between 7 and above. In the category of experience, 21% having experience of 1-3 years, 44% having experience of 4-7 years, 24% having experience of 8-10 years and 12% having experience of 11 and above. Detail of respondents profile is given in Table 24.

**Table 24** *Respondent Profile*

<b>Variable</b>	<b>Category</b>	<b>Percentage</b>
<b>Age (in years)</b>		
20-30	10	10.0
31-40	82	82.0
41-50	7	7.0
50 & above	1	1.0
<b>Total experience (in years)</b>		
1-3	21	21.0
4-7	44	44.0
8-10	24	24.0
11 & above	12	12.0
<b>Tenure in current organization (in years)</b>		
1-3	58	58.0
4-6	33	33.0
7 & above	9	9.0
<b>No. of Children</b>		
No children	34	34.0
1-3	22	22.0
4-6	33	33.0
7 & above	11	11.0
<b>Gender</b>		
Male	67	67.0
Female	33	33.0
<b>Marital Status</b>		
Married	79	79.0
Unmarried	21	21.0
<b>Level of Education</b>		
Master	31	31.0
MS/MPhil	60	60.0
PhD	09	9.0
<b>Present Position/Scale</b>		
Lecturer	79	79.0
Assistant Professor	20	20.0
Associate Professor	0	0.0
Professor	1	1.0

**5.2 Personal Factor:** Relationship and Contribution in Turnover Intention (H1 and H4): In order to find out teachers turnover intention, 12 questions (table 2) belonging to their personal life which may intend them to quit job were asked. The descriptive statistics of these questions is given in Table 25:

**Table 25** Descriptive Statistics (Mean and SD of Sample of Personal Factors)

S. No	Variable	Mean	Std. Deviation	N
1	Health Problem	2.38000	0.89646	100
2	Family related problem	3.13000	0.92829	100
3	Because of Social Status	2.67000	1.01559	100
4	Because of children education	2.33000	0.84154	100
5	Difficult Job	2.15000	0.79614	100
6	Relative are changing job	2.14000	0.81674	100
7	Because of fun	2.48000	0.98964	100
8	Do not like boss personality	3.43000	1.08484	100
9	Expectation not fulfill	3.34000	1.03690	100
10	Family living in other area	2.35000	0.88048	100
11	Unable to publish paper	2.17000	0.84154	100
12	Unable to follow organization rules	2.24000	0.87755	100
<b>Total</b>	<b>Turnover Intention</b>	<b>2.57</b>	<b>0.92</b>	<b>100</b>

The respondents were slightly agreed to three facets of personal factors i.e. that they are intended to quit job because of family related problems (mean 3.13 & SD .92), they do not like their boss (mean 3.34 & SD 1.08), and their expectation from organization has not been fulfill (mean 3.34 & SD 1.06). However, they were not agreed to the nine facets of personal factors i.e. they are disagreed to quit job because of health problem (mean 2.38 & SD 0.89), social status (mean 2.67 & SD 1.01), because of children education (mean 2.33 & SD 0.84), job is difficult (mean 2.15 & SD 0.79), their relative are changing jobs (mean 2.14 & SD 2.14), because of fun (mean 2.48 and SD 0.98), family living in other area (mean 2.35 & SD 0.88), unable to publish paper (mean 2.17 & SD 0.84) and unable to follow organization rules (mean 2.24 & SD 0.88). The overall, employees were slightly disagree to quit job because of personal factors (mean 2.58 & SD 0.73)

Pearson correlation, zero order correlation and regression is used in Table 26, 4 and 5 to test the hypotheses H1 and H4.

**Table 26** Personal Factors Correlations

Variable	Correlation	1	2	3	4	5	6	7	8	9	10	11	12	13
Health Problem	Pearson Correlation	1.000												
	Sig. (2tailed)	.												
Family related problem	Pearson Correlation	.072	1.000											
	Sig. (2tailed)	.476	.											
Social Status	Pearson Correlation	.072	.125	1.000										
	Sig. (2tailed)	.479	.214	.										
Children education	Pearson Correlation	.155	.004	.167	1.000									
	Sig. (2tailed)	.125	.970	.097	.									
Difficult Job	Pearson Correlation	.103	.150	.062	.180	1.000								
	Sig. (2tailed)	.306	.137	.541	.073	.								
Relative are changing job	Pearson Correlation	.134	.122	.105	.185	.172	1.000							
	Sig. (2tailed)	.185	.225	.299	.065	.086	.							
Because of fun	Pearson Correlation	.100	.052	.109	.038	.010	.066	1.000						
	Sig. (2tailed)	.323	.605	.281	.705	.919	.514	.						
Do not like boss personality	Pearson Correlation	.194	.196	.323**	.212*	.077	.023	.116	1.000					
	Sig. (2tailed)	.053	.050	.001	.034	.449	.820	.249	.					
Expectation not fulfill	Pearson Correlation	.055	.025	.088	.072	.111	.134	.013	.075	1.000				
	Sig. (2tailed)	.585	.802	.382	.477	.270	.184	.898	.457	.				
Family living in other area	Pearson Correlation	.055	.155	.006	.021	.090	.029	.107	.149	.021	1.000			
	Sig. (2tailed)	.587	.123	.951	.835	.373	.771	.291	.140	.836	.			
Unable to publish paper	Pearson Correlation	.168	.010	.005	.137	.129	.259**	.119	.163	.246	.042	1.000		
	Sig. (2tailed)	.095	.920	.964	.174	.201	.009	.237	.106	.014*	.681	.		
Unable to follow organization rules	Pearson Correlation	.194	.063	.022	.097	.139	.094	.227	.092	.065	.031	.177	1.000	
	Sig. (2tailed)	.053	.530	.830	.338	.168	.354	.023*	.362	.522	.757	.079	.	
Turnover Intention	Pearson Correlation	.221	.039	.216	.211	.100	.073	.272	.100	.102	.260	.034	.102	1.000
	Sig. (2tailed)	.027*	.701	.031*	.035*	.324	.469	.006**	.321	.314	.009**	.738	.312	.

\* Correlation is significant at the 0.05 level (2tailed).

\*\* Correlation is significant at the 0.01 level (2tailed).

The results supported only five facets out of 12. The first facet is that there is statistically positive relationship between turnover intention and health related problem was strongly supported by the results -0.221 at  $p \leq .0271$ . Similarly, the other three facets i.e. family related problem (0.216 at  $p \leq 0.031$ ), because of fun (0.023 at  $p \leq 0.006$ ) and family living in other area (0.260 at  $p \leq 0.009$ ) are strongly supported. The fourth i.e. children education and turnover intentions and shows negative relation and were also strongly supported by the results -0.211 at  $p \leq 0.035$ . The H1 is accepted and there is strong relationship between personal factors and turnover intention.

In order to find out the contribution of each facets of personal factor in turnover intention of employees, coefficient of correlation is calculated in Table 27.

**Table 27** *Coefficients of Correlation – Personal Factors (Beta Values)*

Variables		Standardized Coefficients	t	Sig.
	Std. Error	Beta		
(Constant)	0.533		1.200	0.232
Health Problem	0.060	0.252	3.426	0.001
Family related problem	0.056	0.060	0.837	0.404
Social Status	0.053	0.187	2.547	0.012
Children education	0.063	0.158	2.180	0.031
Difficult Job	0.066	0.084	1.170	0.244
Relative are changing job	0.065	0.027	0.367	0.714
Because of fun	0.052	0.180	2.525	0.013
Do not like boss personality	0.052	0.025	0.320	0.749
Expectation not fulfill	0.049	0.097	1.397	0.164
Family living in other area	0.058	0.275	3.916	0.000,
Unable to publish paper	0.064	0.093	1.263	0.208
Unable to follow organization rules	0.061	0.161	2.190	0.030

Dependent Variable: Turnover Intention

Table 27 shows the contribution of each factor in turnover intention. The most significant factors which contribute in turnover intentions are family living in other area (2.75% at p 0.00) and health related problems (2.52% at p 0.001). The other factors which also significantly contribute in turnover intentions are: social status (1.87% at p 0.012), children education (1.58% at p 0.31), fun (1.80% at p 0.013), unable to follow organization rules (1.61% at p 0.030).

The overall contribution of personal factors which contribute in turnover intentions is given in Table 28.

**Table 28** *Regression Summary (Personal Factors)*

R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.524	0.275	0.175	0.66173	0.275	2.746	12	87	0.003

Table 28 shows that 17.5% variations in turnover are associated with personal factors. Thus, the hypothesis H4 is accepted as personal factors have significant contribution in turnover intention of university employees.

**5.3 Pull Factors: Relationship and Contribution in Turnover Intention** (H2 and H5): In order to find out teachers turnover intention, 15 questions (table 6) belonging to pull factors of other organizations which may intend them to quit job, were asked. The descriptive statistics of these questions is given in Table 29:

**Table 29** Descriptive Statistics (Mean and SD of Sample of Pull Factors)

S. NO	Variables	Mean	Std. Deviation	N
1	High salary	2.85000	1.00880	100
2	Promotion	2.41000	0.84202	100
3	Research environment	2.78000	1.00081	100
4	Research facilities/funding	2.65000	0.94682	100
5	Job Security	3.81000	0.87265	100
6	Location of organization	3.09000	1.09263	100
7	Organization freedom	2.67000	0.98530	100
8	Respect & values	2.37000	0.89505	100
9	Organization culture	2.51000	0.93738	100
10	More financial benefits	2.36000	0.87062	100
11	Lifework balance	2.78000	1.09710	100
12	High education opportunities	3.46000	1.09563	100
13	Children education	3.59000	1.10184	100
14	Organization support	3.46000	1.00925	100
15	Organization reputation	3.12000	1.05677	100
Total		<b>2.93</b>	<b>0.98</b>	<b>100</b>

The respondents were slightly agreed to quit present job because of six pull factors: job security (mean 3.81 & SD 0.87), good location of other organization (mean 3.09 & SD 1.09), higher education opportunities (mean 3.59 & SD 1.09), good children education (mean 3.59 & SD 1.10), organization support (mean 3.46 & SD 1.00) and reputation of pull organization (mean 3.12 & SD 1.05). However they are not agreed to quit the present job because of nine pull factors i.e. high salary (mean 2.85 & SD 1.00), promotion (mean 2.41 & SD 0.84), good research environment in pull organization (mean 2.78 & SD 1.00), good research facilities (mean 2.65 & SD 0.94), freedom in pull organization (mean 2.67 & SD 0.98), more respect and values (mean 2.137 & SD 0.89), good culture (mean 2.51 & SD 0.93), more financial benefits (mean 2.36 and SD 0.87) and life-work balance in pull

organization (mean 2.78 & SD 1.09). Overall the employees were slightly disagree to quit job because of pull factors (mean 2.93 & SD 0.98)

Pearson correlation, zero order correlation and regression is used in Table 30, 8 and 9 to test the hypotheses H2 and H5.

**Table 30** Pull Factors Correlations

Variables		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
High Salary	Pearson Correlation	1.000															
	Sig. (2tailed)																
Promotion	Pearson Correlation	.097	1.000														
	Sig. (2tailed)	.337															
Research Environment	Pearson Correlation	.177	.132	1.000													
	Sig. (2tailed)	.078	.190														
Research facilities	Pearson Correlation	.008	.059	.285*	1.000												
	Sig. (2tailed)	.938	.560	.004													
Job Security	Pearson Correlation	.185	.072	.014	.081	1.000											
	Sig. (2tailed)	.065	.479	.893	.421												
location of organization	Pearson Correlation	.244*	.019	.287*	.372*	.120	1.000										
	Sig. (2tailed)	.014	.855	.004	.000	.236											
Organization freedom	Pearson Correlation	.091	.030	.156	.243*	.003	.112	1.000									
	Sig. (2tailed)	.368	.766	.120	.015	.975	.266										
Respect & values	Pearson Correlation	.096	.083	.171	.132	.026	.028	.037	1.000								
	Sig. (2tailed)	.344	.413	.089	.191	.795	.785	.716									
Organization culture	Pearson Correlation	.068	.116	.095	.055	.021	.231*	.075	.002	1.000							
	Sig. (2tailed)	.503	.249	.349	.585	.837	.021	.460	.988								
Financial benefits	Pearson Correlation	.269*	.100	.219*	.225*	.228*	.310*	.060	.035	.045	1.000						
	Sig. (2tailed)	.007	.323	.028	.024	.022	.002	.551	.731	.656							
Lifework balance	Pearson Correlation	.189	.044	.020	.129	.177	.076	.231*	.125	.277*	.096	1.000					
	Sig. (2tailed)	.060	.664	.844	.200	.077	.454	.021	.216	.005	.342						
Education Opportunity	Pearson Correlation	.072	.075	.038	.030	.156	.060	.179*	.092	.250*	.080	.043	1.000				
	Sig. (2tailed)	.475	.458	.708	.766	.122	.552	.074	.360	.012	.428	.671					
Children education	Pearson Correlation	.053	.057	.165	.023	.013	.187*	.358	.032	.058	.124	.058	.099	1.000			
	Sig. (2tailed)	.599	.577	.102	.822	.900	.062	.000	.748	.568	.220	.564	.326				
Organization Support	Pearson Correlation	-.269*	.105	.109	.054	.164	.038	.175	.179	.144	.110	-.391*	.181	.126	1.000		
	Sig. (2tailed)	.007	.297	.281	.594	.104	.708	.082	.075	.154	.276	.000	.071	.212			
Organization reputation	Pearson Correlation	.135	.010	.108	.073	.069	.167	.039	.058	.154	.113	-.291*	.013	.139	.099	1.000	
	Sig. (2tailed)	.182	.918	.283	.472	.496	.097	.699	.566	.126	.262	.003	.896	.166	.326		

Variables		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Turnover Intention	Pearson Correlation	.004	.197*	.113	.307*	.010	.105	.025	.142	.212*	.208*	.166	.077	.075	.214*	.203*	1.000
	Sig. (2tailed)	.970	.049	.264	.002	.923	.301	.802	.160	.034	.038	.099	.446	.456	.032	.043	.

The results supported only six facets out of 15. There is significant negative relationship between turnover intention and no promotion (0.197 at  $p \leq 0.049$ ). Similarly, significant negative relationship was found between turnover and organization culture (0.212 at  $p \leq 0.034$ ) and turnover and financial benefits (0.208 at  $p \leq 0.038$ ). Similarly, two facets organization support (0.214 at  $p \leq 0.032$ ) and organization reputation (0.203 at  $p \leq 0.043$ ) are found significant correlated with turnover. The most significant factor is research facilities which are correlated to turnover intention (0.307 at  $p \leq 0.002$ ).

In order to find out the contribution of each facets of pull factor in turnover intention of employees, coefficient of correlation is calculated in Table 31.

**Table 31** *Coefficients of Correlation Pull Factors (Beta Values)*

Variables		Standardized Coefficients	t	Sig.
	Std. Error	Beta		
(Constant)	0.934		1.997	0.049
High Salary	0.079	0.129	1.177	0.243
Promotion	0.084	0.147	1.510	0.135
Good Research Environment	0.077	0.010	0.096	0.923
Good Research facilities/funding	0.086	0.237	2.129	0.036
Job Security	0.088	0.008	0.073	0.942
Good location of organization	0.080	0.126	1.050	0.297
Organization freedom	0.084	0.083	0.730	0.467
Respect & values	0.081	0.097	0.972	0.334
Good organization culture	0.083	0.162	1.516	0.133
More financial benefits	0.094	0.125	1.113	0.269
Lifework balance	0.080	0.075	0.624	0.534
High education Opportunities	0.068	0.004	0.037	0.971
Good Children education	0.071	0.157	1.455	0.149
Organization Support	0.083	0.123	1.073	0.286
Organization reputation	0.073	0.163	1.542	0.127

Dependent Variable: Turnover Intention

Table 31 shows the contribution of each facets of pull factor in turnover intention. However, only one factor i.e. good research facilities (2.37%) is significant.

The overall contribution of pull factors which contribute in turnover intentions is given in Table 32.

**Table 32** Regression Summary (Pull Factors)

R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.520	0.270	0.140	0.67566	0.270	2.071	15	84	0.019

The above table shows that 14.0% variations in turnover intention are associated with pull factors. Thus, hypothesis H5 is accepted as pull factors are significantly contributed in the turnover intention of university teacher.

#### **5.4 Push Factors: Relationship and Contribution in Turnover Intention**

(H3 and H6): In order to find out teachers turnover intention, 19 questions (table 10) belonging to push factors which may intend them to quit job were asked. The descriptive statistics of these questions is given in Table 33.

**Table 33** Descriptive Statistics (Mean and SD of Push Factors)

S. No	Variables	Mean	Std. Deviation	N
1	Less salary	2.29000	0.93523	100
2	Less fringe benefits	2.40000	0.94281	100
3	No job security	2.65000	0.94682	100
4	Small size of organization	3.57000	1.06605	100
5	Organization location	2.19000	0.83720	100
6	Social status	3.57000	1.01757	100
7	Working environment	3.61000	1.08148	100
8	Lack of motivation	2.16000	0.83750	100
9	Employees conflict	3.51000	1.13258	100
10	Lack of recognition work	2.00000	0.66667	100
11	Lack of freedom	2.47000	0.93695	100
12	Lack of career advancement	3.71000	1.06643	100
13	Lack of research facilities	2.57000	0.93479	100
14	More office work load	2.21000	0.83236	100
15	More teaching load	2.38000	0.92965	100
16	Too tired to enjoy family life	2.41000	0.97540	100
17	Not enough time for family	3.45000	1.04809	100



Variable		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
employees conflict	Pearson Correlation	.246*	.117	.011	.142	.050	.061	.057	.073	1.000											
	Sig. (2tailed)	.014	.245	.915	.160	.622	.548	.574	.471												
Lack of work recognition	Pearson Correlation	.130	.112	.080	.043	.000	.045	.084	.145	.107	1.000										
	Sig. (2tailed)	.199	.265	.429	.674	1.000	.659	.406	.151	.289											
Lack of freedom	Pearson Correlation	.189	.021	.120	.194*	.155	.055	.096	.045	.134	.113	1.000									
	Sig. (2tailed)	.060	.839	.234	.053	.123	.585	.340	.658	.185	.262										
Lack of career	Pearson Correlation	.117	.036	.119	.129	.119	.042	.099	.095	.032	.043	.064	1.000								
	Sig. (2tailed)	.245	.721	.240	.201	.239	.677	.327	.349	.754	.674	.524									
advancem ent Lack of research facilities	Pearson Correlation	.156	.066	.205*	.187	.209*	.090	.092	.053	.153	.162	.332**	.299*	1.000							
	Sig. (2tailed)	.120*	.511	.041	.062	.037	.372*	.361	.599	.128*	.107*	.001*	.002								
More office work load	Pearson Correlation	.025	.072	.094	.068	.145	.023	.260*	.237*	.008	.018	.037	.126	.117	1.000						
	Sig. (2tailed)	.807	.476	.351	.502	.150	.817	.009	.018	.940	.857	.713	.211	.245							
More teaching load	Pearson Correlation	.244*	.025	.100	.003	.211*	.014	.122	.142	.016	.049	.060	.041	.170*	.143	1.000					
	Sig. (2tailed)	.015	.802	.323	.973	.036	.888	.225	.160	.878	.629	.556	.689	.090	.155						
tired to enjoy my family life	Pearson Correlation	.032	.083	.059	.013	.035	.167	.077	.217*	.145	.062	.169	.127	.118	.042	.016	1.000				
	Sig. (2tailed)	.752	.409*	.563	.895*	.733	.098	.448*	.030*	.149*	.539	.093*	.207	.243	.677*	.876*					
Not enough time for family	Pearson Correlation	.072	.041	.125	.042	.132	.060	.032	.021	.025	.275*	.050	.171	.120	.028	.260*	.014	1.000			
	Sig. (2tailed)	.479	.686	.216	.678	.191	.552	.755	.838	.804	.006	.622	.088	.234	.779	.009	.887				
Bad behavior of boss	Pearson Correlation	.046	.123	.037	.024	.131	.186	.032	.091	.186	.032	.056	.091	.004	.026	.203*	.335*	.247*	1.000		
	Sig. (2tailed)	.648	.223	.712	.816	.194	.063	.755	.369	.064	.750	.582	.369	.969	.797	.043	.001	.013			
no justice	Pearson Correlation	.075	.103	.157	.047	.024	.204*	.047	.291*	.017	.043	.213*	.066	.120	.128	.060	.232*	.144	.113	1.000	
	Sig. (2tailed)	.457	.307	.119	.645	.816	.041	.642	.003	.866	.671	.033	.514	.233	.206	.552	.020	.152	.263		
Turnover Intention	Pearson Correlation	.186	.021	.036	.074	.040	.127	.062	.221*	.096	.021	.022	.000	.047	.187*	.079	.014	.044	.136	.138	1.000
	Sig. (2tailed)	.064	.839	.720	.467	.696	.207	.542	.027	.342	.837	.826	.996	.644	.063	.437	.890	.664	.177	.172	

\* Correlation is significant at the 0.05 level (2tailed).

\*\* Correlation is significant at the 0.01 level (2tailed).

The results supported only 2 facets out of 19. There is significant negative relationship between turnover intention and lack of motivation (0.221 at  $p \leq 0.027$ ). Similarly, significant relationship was found between turnover and more office work (0.187 at  $p \leq 0.063$ ).

In order to find out the contribution of each facets of push factor in turnover intention of employees, coefficient of correlation is calculated in Table 35.

**Table 35** Coefficients of Correlation – Push Factors (Beta Vales)

Variables	Std. Error	Standardized Coefficients	t	Sig.
		Beta		
Constant	1.127		2.002	0.049
Less salary	0.098	0.201	1.605	0.112
Less fringe benefits	0.086	0.116	1.049	0.297
No job security	0.086	0.073	0.653	0.516
Small size of organization	0.084	0.194	1.571	0.120

Variables		Standardized Coefficients	t	Sig.
	Std. Error	Beta		
Organization location	0.101	0.022	0.188	0.851
Social status	0.083	0.125	1.076	0.285
Working environment	0.078	0.039	0.332	0.741
Lack of motivation	0.101	0.185	1.598	0.114
Employees conflict	0.072	0.023	0.210	0.835
Lack of recognition work	0.125	0.014	0.127	0.899
Lack of freedom	0.092	0.035	0.297	0.767
Lack of career advancement	0.079	0.042	0.367	0.715
Lack of research facilities	0.100	0.084	0.659	0.512
More office work load	0.098	0.148	1.329	0.188
More teaching load	0.090	0.130	1.129	0.262
Too tired to enjoy family life	0.090	0.050	0.415	0.679
Not enough time for family	0.082	0.050	0.423	0.673
Bad behavior of boss	0.092	0.193	1.628	0.108
No fairness	0.081	0.102	0.868	0.388

Dependent Variable: Turnover Intention

Table 35 shows the contribution of each facet of push factor in turnover intention. However, no variable has significant contribution in turnover intention.

The overall contribution of push factors which contribute in turnover intentions is given in Table 36.

**Table 36** Regression Summary of Push factors

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.450	0.202	0.013	0.72382	0.202	1.066	19	80	0.400

The above table shows that 1.3% variations in turnover are associated with push factors. However, hypothesis H6 is not accepted as pull factors are not significantly contributed in the turnover intention.

**5.5 Comparison of Personal, Pull and Push Factors in term of their Contribution in Turnover Intention:** Each facets of personal factor, pull factor and push factor is compared in Table 37 to show which facet is significantly contributed more in turnover intentions. Similarly, the overall contribution of

personal factor, pull factor and push factor in turnover intention has been shown in the last section of Table 37 from comparison point of view.

**Table 37** Comparison of Personal, Push and Pull Factors in Contributing Turnover Intention

Variables	Personal Variables			Pull Factors			Push Factors		
	Beta Model	t	Sig	Beta Model	t	Sig	Beta Model	t	Sig
	1			2			3		
<b>1. Personal Variables</b>									
Health problem	.252	3.426	.001						
Family related issue	.060	.837	.404						
Children education	.187	2.547	.012						
Because of fun	-.158	-2.180	.031						
Because friends changing jobs	.084	1.170	.244						
Because I do not like boss	-.027	-.367	.714						
Unrealistic expectation	.180	2.525	.013						
Inability to publish paper	-.025	-.320	.749						
Social Status	.097	1.397	.164						
Difficulty in teaching	.275	3.916	.000						
Inability to follow rules	-.093	-1.263	.208						
Lining close to family	.161	2.190	.030						
<b>2. Pull Variables</b>									
High salary				.129	1.177	.243			
Career advancement				-.147	-1.510	.135			
Good research environment				.010	.096	.923			
More research facilities/funds				.237	2.129	.036			
Job security				.008	.073	.942			
Organization in good city				.126	1.050	.297			
More freedom and autonomy				-.083	-.730	.467			
More respect and values				-.097	-.972	.334			
Better organization culture				-.162	-1.516	.133			
More benefits				-.125	-1.113	.269			
Less work load (life-work balance)				-.075	-.624	.534			
Education opportunities				-.004	-.037	.971			
Children education facilities				.157	1.455	.149			
Good organization support				.123	1.073	.286			
Well reputation of organization				.163	1.542	.127			
<b>3. Push Variables</b>									
Less salary							.201	1.605	.112
Less fringe benefits							-.116	-1.049	.297
No job security							.073	.653	.516
Small organization size							.194	1.571	.120
Organization location							-.022	-.188	.851
Social status							-.125	-1.076	.285
Working environment							.039	.332	.741
Lack of motivation							-.185	-1.598	.114
Employees conflict							-.023	-.210	.835
Lack of work recognition							.014	.127	.899

Variables	Personal Variables			Pull Factors			Push Factors		
	Beta Model	t	Sig	Beta Model	t	Sig	Beta Model	t	Sig
	1			2			3		
Lack of freedom							-.035	-.297	.767
Lack of career advancement							-.042	-.367	.715
Lack of research facilities							.084	.659	.512
More office work load							.148	1.329	.188
More teaching load							.130	1.129	.262
job make tired to enjoy family life							-.050	-.415	.679
Not enough time for family							-.050	-.423	.673
Bad behavior of boss							-.193	-1.628	.108
No fairness/justice in organization							.102	.868	.388

R <sup>2</sup>	0.275	0.270	0.202
Adj. R <sup>2</sup>	0.175	0.140	0.013
Sig F Change	0.003	0.019	0.400

\*Significant at the .05 level;

\*\*Significant at the .01level

Table 37 indicates that the most significant facets of personal factors which contributed in turnover intention are difficulty in teaching and health problem. The other significant facets of personal factors are children education, unrealistic expectation for organization, living close to family and because of fun (enjoy in changing job). The overall contribution of personal factors in turnover intention is 17.5%.

In pull factor the most significant reason that employees quit are the more research facilities and funding which intent them to quit. The overall contribution of pull factors in turnover intention is 14.0%.

In push factor no significant reasons were found due to which employees quit. Similarly, the overall contribution of push factors in turnover intention is 1.3% which is not significant.

## 6. CONCLUSION

In literature various factors / reasons have been identified for the employee's turnover intentions. These factors of turnover intentions are different from organization to organization to some extent. In this paper all factors were divided into three main factors i.e. Personal Factors, Push Factors, and Pull Factors in order

to find out the contribution of each factor in turnover intention of the university teachers in Pakistan.

This paper concludes that the most significant factor is personal factor (17.5% contribution in turnover intention) followed by pull factor (14.0% contribution in turnover intention). The push factor also contributed in turnover (1.3%) but not significantly.

The most significant reasons in personal factor are difficulty in teaching (employees quit a university job because teaching is difficult for them) and health problem (employees quit a job because they have health related problem). Other reasons which were found significant are: children education (employees quit jobs because they did not find good education facilities in the area), unrealistic expectation for organization (employees quit job because the organization did not meet their expectation), living close to family (employees quit job because they are away from their family) and because of fun (employees quit job because they enjoy in changing job).

The most significant reason in the pull factor that compels employees to quit job is more research and funding facilities of other universities. In push factor no significant reasons were found due to which employees quit.

The overall conclusion is that personal factors are the more significant in turnover intention in case of university teacher in Pakistan. Therefore the organization may take into consideration the personal problems of their employees to reduce turnover of their good employees.

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## Questionnaire

The following questionnaire is designed to analyze/measure the turnover intentions of university teachers. You are requested to kindly fill the questionnaire. The information gathered through this questionnaire would be kept confidential and would be used only for research purpose.

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### **PART A (SOCIO DEMOGRAPHIC FACTORS)**

**Please tick/fill as appropriate to you**

- 1 Your gender: Male Female
  - 2 Your age (in years): \_\_\_\_\_
  - 3 Your marital  Married  Unmarried status:
  - 4 Your number of children: \_\_\_\_\_
  - 5 Your highest level of completed Bachelor Master MS/MPhil PhD Education:
  - 6 Your total experience (in years): \_\_\_\_\_
  - 7 Your tenure in current organization (in years): \_\_\_\_\_
  - 8 Your present Lecturer Assistant Professor Associate Professor Professor position:
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### **PART B (PERSONAL FACTORS)**

**What are the main factors that intend you to resign or switch to new job? (Please circle which is more appropriate to you)**

	Questions	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	Because of my health problem					
2	Because of my family related problem					
3	Because of my children education as good schools are not available in the city where my origination is located					
4	Because social status of teachers is quit low					
5	Because teaching is difficult job					
6	Because some of my friends/relatives are changing jobs					
7	Because of fun					
8	Because I do not like the style/personality of my boss					
9	What I expected from my present job, are not available					
10	Because I want to leave with my family as my organization is located in other area					

Questions		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
11	I am unable to publish research paper as required					
12	I am unable to follow organization timing, rules and regulation					

### PART C (PULL FACTORS)

What are the main factors that attract (pull) you to switch to new job? (Please circle which is more appropriate to you)

Questions		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	High salary					
2	Career advancement / promotion					
3	Good research environment					
4	More research facilities and funds					
5	Job security					
6	Organization is locate in good region / city					
7	More freedom and autonomy					
8	More respect and values					
9	Good organization culture					
10	More financial benefits					
11	Less work load (life-work balance)					
12	Higher education opportunities					
13	Availability of good education for children					
14	Good organization support					
15	Well reputation of organization					

### PART D (PUSH FACTORS)

What are the main factors which push you to leave your present jobs? (Please tick which is more appropriate to you)

Questions		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	Because I have less salary					

	Questions	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
2	Because fringe benefits are less					
3	Because my job is not secure					
4	Because size of present organization is small					
5	Because organization is located in small town					
6	Because it is not according to my social status					
7	Because working environment is not good					
8	Lack of motivation and encouragement for good work					
9	There is conflict among employees					
10	Lack of recognition of my work					
11	Lack of freedom in present organization					
12	Lack of career advancement					
13	Lack of research facilities and opportunities					
14	More office work load					
15	More teaching load					
16	Because job make me too tired to enjoy my family life					
17	Because my job does not give me enough time for my family					
18	Bad behavior of my boss					
19	Because there is no fairness/justice in organization					

## PART E (INTENTION TO QUIT)

The following questions are related to your intention to quit from present organization. Please tick as appropriate.

	Questions	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	As soon as I can find a better job will quit at this organization					
2	I often think about quitting my job					

Thanks

VIEWPOINT

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## SEARCHING FOR CAUSES OF THE CURRENT FINANCIAL CRISIS: ON RISK UNDERASSESSMENT AND IGNORANCE

Alexandra HOROBET<sup>\*</sup>

***Abstract:** The paper presents the author's views on one underlying cause of the current financial crisis: the erroneous assessment of risk by market participants. We argue that besides other convincing explanations of the causes behind the recent financial turmoil such as loose government and central bank policies, the process of market liberalization, investors' appetite for risk and excessive financial modeling, we need to recognize the fact that underassessment of risk by market participants and policy makers is a major cause for the current crises, as for previous ones. This underestimation of risk comes largely as a result of two realities: first, risk magnitude was not entirely known by market participants, due to an interlinking of securities, structures, and derivatives built around the subprime mortgages; second, market participants ignored these risks to a large extent, in a world where access to financial markets was as easy as never before.*

***Keywords:** financial crisis, risk underestimation, subprime mortgages*

***JEL Codes:** G01, G32*

At the beginning of the 21<sup>st</sup> century, world capital markets were in a new era of globalization and most likely nobody was considering the possibility of a reverse of globalization. During the first eight decades of the 20<sup>th</sup> century, worldwide financial assets grew at about the same pace as the global GDP, with the exception of times of war, when governments' debt rose more rapidly. In the United States,

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the total value of financial assets as a percentage of GDP has grown more than twice as much since 1980 as it had in the previous eighty years. At the global level, equities and private debt accounted for most of the increase in financial assets since 1980, as companies and financial institutions turned increasingly to capital markets for financing. By 2007, the total value of global financial assets reached a peak of \$194 trillion, equal to 343 percent of GDP, which means a degree of financial depth – an indicator defined as the ratio between financial assets value and GDP – never known in history before. Financial assets growth until 2007 may be explained by numerous factors, including advances in communications and technology, financial markets liberalization and deregulation, and innovations in financial products. But 2008 brought a break of the growing trend, as the value of financial assets fell by 16 trillion US dollars to only 178 trillion US dollar. Equities are the main class of assets responsible for this drop, according to research developed by McKinsey Global Institute at end 2009.

The increased value of global financial assets and financial flows provided the world economy with significant liquidity, which nourished unjustifiable increases of security prices in some markets. Additionally, hedge funds increased the credit risk in financial markets due to excessive use of leverage. Moreover, the lack of information with respect to these players was amplifying the risks. The financial euphoria in the last years, the unprecedented number of financial innovations, the development of highly risky financial instruments, not always sufficiently tested and understood, the insurance and reinsurance of risk (although the risk remains somewhere in the system), the globalization and the interconnectivity between markets and industries, all these led financial markets to a tipping point. This point was reached when investors realized that the risk premiums they were asking were much lower compared to the size of risk exposure they faced. And then financial crisis was already in the picture.

Since the end of 2008 economists, analysts and alike have tried to come up with convincing explanations of the causes behind the recent financial turmoil: some have been blaming loose government and central bank policies, some have been pointing towards the process of market liberalization, some have been focusing on investors' appetite for risk and some are trying to show that excessive financial modeling is to be hold responsible for financial markets collapse. Behind all these possible explanations, nevertheless, we need to recognize the fact that

underassessment of risk by market participants and policy makers is a major cause for the current crisis, as well as for previous ones.

Financial crises are all different and all similar. Radelet and Sachs (1998) advance a taxonomy of financial crises, building on a number of characteristics that may be seen as the main initiating causes of financial crises: (1) a speculative attack on the exchange rate – either attacks based on „fundamentals” deterioration and or purely speculative attacks -; (2) a financial panic; (3) an asset bubble burst; (4) a moral hazard crisis, under the form of implicit or explicit bail-outs; and (5) the acknowledgment of a threatening debt, followed by erroneous measures. When we look carefully at these characteristics, all of them appear as a result of a sudden recognition by market participants of the true level of risk they are exposed to. And when market participants, especially the private ones, connect properly again the risk with the risk premium, a financial market correction is typically the answer. Sometimes, in case the “irrational exuberance”, as Greenspan put it, was too high, market correction takes the form of a financial market collapse.

Stock markets are volatile and we see returns fluctuate widely, regardless of the country. Brock (2002) notes a curious aspect of market crises and financial instability: they do not mirror the underlying economy, at least not in developed countries. While the risk has increased in capital markets, the real economy has experienced the opposite. To take the example of the United States, the GDP volatility has dropped steadily in the past fifty years, the same being true for disposable personal income. With greater stability in economic productivity and earnings, and with broader access to borrowing, the variability of consumption on a yearly basis is less than a third of what was in the middle of the 20<sup>th</sup> century. The same pattern is to be found in Europe, where both GDP and consumption have become more stable over the course of the past fifty years. At the same time, the average annual standard deviation in the S&P 500 index was higher during the past twenty years than it was fifty years earlier. Bookstaber (2007) explains this paradox – the fact that the total risk in financial markets has grown in spite of a significant decline in exogenous economic risk – as a key symptom of the design flaws within the system, as risk should be diminishing, but this is not actually happening.

Unfortunately, we have seen this phenomenon in an acute form in the current financial crisis. Even more dramatic is the fact that risk magnitude was not entirely known by market participants, due to an interlinking of securities, structures, and derivatives built around the subprime mortgages. Subprime mortgages are an

innovative financial instrument designed with the goal of allowing poorer riskier borrowers to access the mortgage market. In a world of declining long-term interest rates and falling inflation, asset prices, including houses, were quickly growing. For home owners in both developed and developing world, the rise in price assets was felt immediately and directly, as the value of their real estate soared. Before 2007 countries such as United States, United Kingdom, Spain, Australia, India and Romania were facing real estate booms and they are not the only ones to experience the phenomenon. As a result, the demand for very-high yielding securities based on subprime mortgage loans rose significantly. Subprime mortgage originations in the United States rose to incredible levels, as they increased threefold between 2002 and 2005<sup>31</sup>. The central design feature of subprime mortgages was the ability of borrowers to finance and then refinance their homes based on capital gains due to house price appreciation over short horizons and then turning this into collateral for a new mortgage. This resulted in unique structures for subprime mortgages securitization in the form of residential mortgage-backed securities (RMBS), which quickly entered underlying portfolios of collateralized debt obligations (CDOs). At their turn, these portfolios were often used for the management of asset-backed securities (ABS), RMBS and commercial-backed securities (CMBS) portfolios. Moreover, financial institutions entered in the process of selling CDO tranches at their market value or their risk was swapped in negative basis trades. At the same time, additional risk linked to subprime securitization was induced in the system by the use of credit default swaps as inputs for CDOs. It is obvious that this nesting of securities and derivatives generated a loss of information regarding the original sources of risk behind the instruments.

In 2006 a new synthetic index of subprime risk was introduced in the United States, called ABX, which traded over-the-counter, and allowed for the information on subprime mortgages market value and risks to be revealed. This offered market participants the chance to show their views on the value of subprime securities, even though the original source of risk was not known entirely and could not be easily dismantled. In 2007 the value of this index fell, indicating a reversal in market value of mortgage-backed securities. The information provided by ABX trading, coupled with the lack of information related to where did the risk

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<sup>31</sup> Unfortunately, as Greenspan (2008) notes, the size of subprime mortgage increase did not become generally evident until 2005: in 2002, subprime mortgages had accounted for only 7 percent of United States regular mortgage originations, but in three years the subprimes rose to a 20 percent share.

originally come from, led to a loss of confidence on the part of banks with regard to their debtors' ability to honor their contractual obligations. In short, the information asymmetry between the sell-side of the market and the buy-side regarding the complexities of the subprime chain of securities and derivatives was corrected by the introduction of the ABX index, which revealed and aggregated values of the subprime bonds with centralized prices, until the index fell.

The fact that information about risks was largely not known to market participants does not tell the true story of the current financial turmoil. Besides not knowing the size of risks, market participants ignored these risks to a large extent. In 2005 and 2006, when demand for subprime mortgage loans surged, risks seemed low because during the years of increasing house prices defaults on such loans were extremely rare – partly because the availability of new home equity and refinancing loans was high -. Around the world, institutional investors such as pension funds, hedge funds and investments banks were highly interested in such products, which stimulated demand even more. As a consequence, supprime lenders were engaging in new loans followed by immediate resell to securitizers, which in turn encouraged more and more people to apply for mortgages, given the relaxed terms of the loans<sup>32</sup>.

Certainly, the best attitude towards these problems would have been prevention. One of the questions that came often in the mind of many analysts is why the world economies were totally unprepared to face such a shock. There are in the current financial crisis at least two similarities with the previous crises: on one hand, the crisis was caused by an underestimation of risk undertaken by banks, and, on the other hand, the governmental interventions materialized by money injections and nationalization permitted the moral hazard to fully manifest itself. After the financial crisis of the 1990s we saw a huge debate about the reconfiguration of the international financial architecture. The current crisis shows, unfortunately, that discussions were not materialized in concrete steps for restructuring the international financial system, in a framework of financial markets liberalization and of increased complexity of markets and instruments.

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<sup>32</sup> For example, a mortgage could have been obtained without a down payment, with an adjustable rate that offered the possibility of the debtor to decide how much he wanted to pay every month for the loan, or even without having to document the income or the assets that were backing up the loan.

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## BOOK REVIEW

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**Constantin Popescu, Alexandru Taşnadi,  
*Respiritualizarea. Învăţă să fii om,*  
ASE Publishing House, Bucureşti, 2009, p. 428**

Reviewed by Benjamin COTIGARU\*

*Respiritualization. Learn to be a Man* is a dream defining the century of Human Family – an organic part of “all livings.”<sup>33</sup> While the authors of this book call this *dream human and institutional respiritualization*, J. Rifkin<sup>34</sup> points out in his book *The European Dream, the second dawn of the Enlightenment*, about which Romano Prodi says that “it reflects the European soul, showing us who we are, what values to uphold and to what we aspire in the new Europe.”

As a result of the new perception of the human existence essence as a *responsibility of meaning*, the dream of Constantin Popescu and Alexandru Taşnadi – Professors at the Academy of Economic Studies in Bucharest, is built on two pillars of the new holistic paradigm that is centred upon the “health of all living things”<sup>35</sup>.

The first pillar of human and institutional respiritualization is seen by both authors in terms of *love* – as the most profound imperative of human life which

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<sup>33</sup> According to the two authors, the concept of „all livings” stands for an assembly of „integrated wholes” to which the natural environment and the artificial one made up of communities, families, organizations and institutions also belong ( to see Constantin Popescu, *Raţionalitate şi Speranţă. Paradigma întregului viu*, Renaissance Publishing House, Bucharest, 2006)

<sup>34</sup> Rifkin, J., *Visul European. Despre cum, pe tăcute, Europa va pune în umbra „visul american”*, Polirom Publishing House, 2006

<sup>35</sup> Both authors suggest to extend the concept of human health to other organic components of all livings, such as: natural environment, communities, families, organizations and institutions. As a result, we can talk about environment health, community health, organization health, family health and institution health.

includes all the positive feelings manifested in Human Family, under the form of appreciation, admiration, respect, gratitude, confidence etc. Love is that kind of feeling that gives positive effect to our choices and integrates them in our own area of consciousness where “each individual is questioned by life,” says Dr – Viktor E. Frankl – and he, in his turn, can answer only answering life for his own life; only being responsible, individuals can give an answer to life itself<sup>36</sup>.

According to the two authors mentioned above, the second pillar of human and institutional respiration is the *scientific knowledge* under the form of self-discovery and knowledge of the world where we coexist and succeed each other. By respiration of the scientific knowledge, we get a deep meaning necessary to the transition from “knowledge is power” to “knowledge is wisdom”, which, as well as the two authors consider, stands for a paradigm shift as a result of human and institutional respiration.

Only through love and scientific knowledge, as the two professors state, an individual can free himself, he can use a part of society built up inside himself, under the form of values acquired during his first years of life, similar traditions, culture of respect and knowledge on behalf of the life fulfillment- life lived in community, work based on social division and love helping you improve your happiness.

As part of the top contemporary debates according to which the current global crisis is a “complex, multidimensional crisis” with obvious influences on every aspect of our lives – health and livelihood, environmental quality and social relations, economy, technology and practice ... a crisis with intellectual, moral and spiritual dimensions...<sup>37</sup>, the authors of Respiration... think that “progress and prosperity through the rich diversity of life either natural and human or social and spiritual stand for the goal of respiration.... As a whole, respiration is a path to enlightenment of human being, as it stands for a cosmic being at the level of all livings.”<sup>38</sup>

Trying to build the area of interest of the concept of respiration, the authors place its source inside *the cry of consciousness*, where the whole evolution of our common coexistence and succession is built. Designed as a light of freedom responsibility to be an organic part of “the integrated ones” according to the law

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<sup>36</sup> Viktor E. Frankl, *Omul în căutarea sensului vieții*, Meteor Press, Bucharest, 2009, p. 121

<sup>37</sup> Fritjof Capra, *Momentul adevărului*, Tehnică Publishing House, Bucharest, 2004, p.3

<sup>38</sup> Constantin Popescu, Alexandru Tașnadi, *Respirationizarea. Învățã să fii OM*, ASE Publishing House, București, 2009, p. 428

“All is one, One is the one, One is All and Everything is All”, respiration envisages that cry of consciousness that aims to “rebuild the values in the spirit of which we live, work and love, to rebuild education considering any possibility of shaping individual as expert and not that kind of expert situated above individual’s natural possibilities, to put precious on ethics more than on the use of technology, the morality of wealth before its benefits ... the fulfilment of human beings under the sign of being in organic contact with to have. It is the human richness that becomes morality and the ethics related to the concept “to have.”<sup>39</sup>

Considering the two professors’s opinion, respiration is the defining element that builds love and scientific knowledge, putting them in harmony with the imperatives of human life in society, the requirements of health related to all livings. In the book, the two authors give Mrs. Golda Meir’s answer to the question what characterises Jewish people: she replies that the whole wealth of her country is its spirit. She goes on saying that it is the spirit of her people the most treasured fortune of Israel and if people happen to lose their spirit, then not even the United States of America could save them.<sup>40</sup>

At the same time, the spirit of respiration implies *the return to the values on which the harmony between love, science and faith in the certainty of hope is based*. Love without knowledge is blind as scientific spirit, while knowledge across the borders of love may become destructive. Without any meaning, both may come into harmony, being independent, but organic at the same time, the human mind only on the grounds of faith under the certainty of hope. The authors of respiration, just like Allan Bloom, emphasise that a crisis of the university- where there is the home of our reason, is actually a crisis of human as a cultural being. It explains why what man has in his natural environment is nothing compared to what he acquired from culture.<sup>41</sup>

By human respiration, professors as Constantin Popescu and Alexandru Tașnadi suggest a new return to culture as a supreme expression of human’s creativity, as a bond that gather people in a group of roots, based on customs, styles, tastes, rituals etc.

Like Allan Bloom, the authors of human and institutional respiration see in the culture based on love, knowledge and creativity the foundations of

<sup>39</sup> Ibidem, p. 427

<sup>40</sup> Quoted after Constantin Popescu and Alexandru Tașnadi, quoted works, p. 329

<sup>41</sup> Allan Bloom, *Criza spiritului american*, Humanitas Publishing House, Bucharest, 2006, p. 226

human dignity<sup>42</sup>, that form of human community through which the harmony between art and life becomes is achieved. The respiritualization suggested by the two professors is the model of restoration through Romanian culture values that are born by love, knowledge and faith in the certainty of hope.

Paraphrasing on Kaiserling, the authors of human and institutional respiritualization have got the wisdom that if people wanted to improve the external conditions of life, then a necessary attention should be given to the inner human side<sup>43</sup> where the most mysterious human powers exist and react: *the power of mind, the power of the heart and the power of soul*. Conditioning the human and institutional respiritualization in terms of fulfilment of human life in society, the authors of the paper we are interpreting believe that humanity places itself in the deepest crisis of cultural education.

From this perspective on the role of school, they are supporters of the Nobel Laureate in Medicine, Albert Szent-Gyorgyi. So, school must, first, teach us how to learn, to awaken our thirst for knowledge, enjoy the satisfaction for a well done thing and the excitement of creation, we learn to love what we do and helps us discover what we'd like to do.<sup>44</sup>

Considering the respiritualization of education, the authors of the paper on which we are focused, to make it popular and well understood, suggest that education should turn school into a *train of cultural development, a partner in the process of making decision, as well as in the transfer of scientific culture into social practice, in institutional responsibility to fulfil human life as part of society*.

Conceiving real education from the perspective of human life fulfilment, the authors of human and institutional respiritualization believe that the reconstruction of education on the meaning of life is a complex process of extremely human openness, which is the responsibility of human communities which regards education as the most important thing towards which the society should direct, uniting the meaning of the past with the future requirements, facing up the contradictions of present times.

Whether good or bad, a book cannot help you if you do not read it. If you read it, it certainly helps you even if it is bad or good. In both cases, you have something to learn. In both cases learning is a benefit. In this book, the authors say

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<sup>42</sup> Ibidem, p. 223

<sup>43</sup> Albert Szent-Györgyi, *Pledoarie pentru viață*, Politică Publishing House, Bucharest, 1981, p. 208

<sup>44</sup> Ibidem, p. 134

that it would be efficient or desirable that people should learn from positive experiences, the common and scientific knowledge, and the wisdom that runs through the area during our common faith in the certainty of hope. It appears that individual and society in general are taught a lesson especially when the evils happens. If we consider that we live a life that means 10% of what happens to us and 90% of how we react to what happens to us, means that most of what we learn is about us, about what could positively or negatively affect our lives.

Regarding the reality of our common coexistence and succession, the harmony of all living, as the authors say, under all their various forms, is given by complementary parts: the good individual with the bad one, the tall one with the short one, the clever one with the stupid one, the active fool with the passive fool, the fat one with the thin one, the strong one with the weak one, the beautiful one with the ugly one, the great one with the small one, the healthy one with the sick one, the rich one with the poor one, the active corrupted with the passive corrupted etc.

These organic parts of any all livings, say the authors, the human individual, organisation, community, family, natural environment, institution etc., are under the magnifying lens paradigm by which we perceive, know them and understand them, or we relate to them. This lens is the human mind, formed during our first seven years of life, when one sets the basic core values that are meant to define our being, character within the *institutional school*, where society through knowledge defines a particular model of education challenging human brain in a productive way within the school of productive employment, when people show their faith in “to have”, or “to be” at the *school of the sunset life*, when people share their experience acquired along the years as a result of living in a *life transition school* when each individual faces up an unique and irreversible experience.

The book that we intend to analyse “*Respiritualization. Learn to be a man*” is written as a dialogue between them and through them, with a number of “beautiful minds” that coexist in society, the substance of which is based on representative works of science and faith, physics, medicine, psychology, economic, sociology, anthropology, religion, philosophy and politics etc.. From the beginning, we want to say that the *principles of spiritualization* are under the sign of the new paradigm which the authors have called it “health of all livings”.

By respititualization, the authors suggest that there is a change in the common sense of our common evolution towards a wrong direction. The world in

which we should live, work and love – as imperatives of transition through human life, as the physician Alfred Adler used to call them – is *dehumanised* and *disoriented*, as evolution of meaning, is in a Great Depression, which seems the worst in history. As we have said and as the authors of respiritualization stated, this crisis is a spiritual crisis, a crisis of cultures generated by the deep meaning of the two leading concepts “to have” and “to be”.

Founding respiritualization on the authentic values, the authors perceive this inner substance that helps us keep our identity and fulfil our life from many points of view. Alan Bloom would say that a value is not a value if it does not enhance life. Quasy-totality of human values consists of less or more fade copies of the initial values<sup>45</sup>. By human respiritualization, our teachers pay attention to the fact that there has been a split between love, science and faith in the certainty of hope, which resulted into a gap between us and the fulfilment of human life from the perspective of “to be”.

The studies emerging *on the new holistic paradigm* with some *holonomic nature*, as well as the religious, sociological and anthropological researches highlight the fact that people have produced with their hands, mind, but also with other human powers, *a kind of progress that is threatening them!*<sup>46</sup> On the other hand, the authors say, like other scientists of good faith, that people have directed scientific knowledge and wisdom to the area of exploring people and the environment where they coexist, their space in order to use these results for the fulfilment of human life in society, release from pain and provide of food, housing, training and development of cultural identities that come naturally placed on the table of bio-social diversity of meaning development.

Quating a Nobel laureate in medicine, the authors say *that if it were to take all that mankind has from scientific knowledge, it would make to bring it back to the Stone Age and civilisation would collapse.*<sup>47</sup>

Moreover, the same remarkable results of scientific knowledge, as the authors of this book admit, have been used to destroy all livings’ life- the life of people and human communities, natural environment, families and institutions, organisations etc. The systemic pollution, the cosmo- technical arming, the global poverty, the uncontrolled over-morality for millions of people and the under

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<sup>45</sup> Allan Bloom, quoted works p. 239

<sup>46</sup> To see Pope John Paul II, *Encyclicals*, ARCB Publishing House, Bucharest, 2008, pp. 34-38

<sup>47</sup> To see Albert Szent- Györgyi, quoted works, p. 174

consumption threatening millions of people show that man now has at his disposal as a result of scientific knowledge, cosmic energy to which people are not normally accustomed.

With some of these energies, people could destroy all living over three times, as if once it would not be enough! The current global crisis, as the physicist Fritjof Capra says, *The Moment of truth*, highlights a serious spiritual work: *the world lost its compass*. In fact, what did it lose? The fundamental values, in which we live, work and love each and all together, within the segment of human time which people have at their disposal. Thus, we arrived, to be afraid, as Pope John Paul II used to say, that the results of the hands and minds might turn against life as a living whole.

Respiritualization, as the authors of the book state, is the cry within us which should arouse the phenomenon of consciousness, that metanoia able to produce change from within to outside life. From this perspective, the authors say the society in which we live is not a scientifically knowledge-based society, because so far now human evolution has been common to the use of scientific knowledge.

What should the century we entered mark in terms of human and institutional spiritualization? The entry of human society in the era of *practical responsibility for the use of scientific knowledge and the certainty of faith in hope from the perspective of all livings' health* made up of natural environment, people, human communities, organisations, families and institutions.

A survivor of Nazi camps, Dr. Viktor E. Frankl, said that life implies especially to be responsible, the responsibility itself being the very essence of human existence.<sup>48</sup>

In the two authors' opinion, spiritualization, as internal transformation process through which people learn to be human must include *education*. We need at a global scale, another programming model of human brain which should proceed from the understanding that true education must serve the fulfilment of human life in society, the real life as work based on social division and as love render us real human beings.

However, so far now, education has pursued to become factors of production, depending almost exclusively on career, as if we rendered our children work factors!

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<sup>48</sup> To see Viktor E. Frankl, *Omul în căutarea sensului vieții*, Meteor Press Publishing House, Bucharest, p. 121

Respiritualization of education does not exclude training people in the spirit of worship work quality, but learning how to appreciate those people's education, who produce and seriously pollute the natural environment, who have as the main priority "to have" driven by greed, who use scientific knowledge to produce weapons of destruction, full of life, spending over \$ 3 billion a day, while human health, communities and institutions spend far more on!

The authors are convinced and demonstrate with arguments that education is on the wrong way at a global scale. Therefore, its spiritualization has to mean putting the fundamental values of life at the foundation of human mind in a free and democratic society. *Terra, a wise saying said, has enough resources to feed everyone. Unfortunately, it does not have sufficient resources for human greed!* Not to mention that the most important human resources, are used for cosmo-technical arming and not for education and public health!

Freedom, responsibility, human solidarity and social communion are considered fundamental values of education spiritualization which implies that education is meant to fulfil human life in society. Excessive reliance on work or career is even worse than drug addiction because people seem to forget to live and love. People, as professionals, work to fulfil their own life and do not live just to work!

Work is, indeed, a fundamental cornerstone of life in society, but only one of them; at the same time, there are also another two ones – life lived in community and love that only together give life a well-built meaning. In fact, the authors say, quoting Alfred Adler<sup>49</sup>, humans are created with such organs such as eyes, hands, mouth and ears only to adjust themselves as social being, which is the key of a fulfilled life. How smart is human nature, how smart are our all livings of which we are an organic part!

The authors propose that in all forms of education, pupils and students, regardless of specialized training, should be able to choose to learn subjects of "spiritual package", such as music, literature, painting, dance, gardening, etc., particularly useful for the fulfilment of a life, work and love in all stages of transition through life, including the sunset of life. And all these happen in spite of the fact that love and knowledge are human factors of competitiveness.

In the book, we meet the proposal to extend the concept of human's health to all components of all living humans, communities, families, organisations,

institutions and natural environment. And this because they are designed as living organisms, parts of the whole.

For example, *at the level of business organisations, instead of economic efficiency people should use the concept of health of organisations*, the concept being approached both in terms of profitability and in terms of the health of employees, the urban or rural communities health, where that respective organisation is situated, the health of families working in that respective enterprise, the health of institutions governing the games or the health of environment. As a result, an organisation is healthy and effective, but not every organisation is efficient and healthy. Our universities, as living organisms, must be healthy. This means that the values of the academic organisation must serve to the fulfilment of human life in terms of freedom and responsibility.

At the foundation of human and institutional respiritualization, the authors place a number of principles arising from health requirements of all livings considering the “win – win” principal, instead of the “win – loss”, the harmony between economic rationality and hope in life instead of the rationality of absolutization through the market, the guarantee of a healthy economic growth instead of undifferentiated, growth, the use of human indicators in assessing the macroeconomic results, the shift from competition among people in human competition with themselves, the rethinking of education in terms of functions of the intelligent human self and the development of the capability of looking for happiness instead of transforming people in production factors depending on career and the understanding that it is uncertainty that define the game of life in society.

In the field of economic education, the authors, for the first time, propose projects on the *oath of professors of Economics and economists*, these two interpretations being going to be discussed and integrated in an operational system that would result in appropriating consequences in terms of economic education respiritualization.

The fact that the ideas of the book were released and discussed within prestigious communities and organizations of high spirituality of Cluj-Napoca, Targu-Mures, Targoviste, Ploiesti, Curtea de Arges, Drobeta Turnu Severin, Targu-Jiu and Bucharest by participation of some personalities from the economic, social, political, religious, academic etc. shows that we are facing up some reflections on a complex phenomenon that requires formation of nuclei of human and institutional

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<sup>49</sup> Alfred Adler, *Sensul vietii*, Irl Publishing House, Bucharest, 1995, p. 201

respiritualization. It is necessary to elaborate acts and deeds necessary for the transition to transform the reality we live in, by changing from inside the way people perceive and relate to the world they live in, work and love. By spiritualization, *the authors suggest to return to the harmony of love and knowledge of science, between science and faith in the certainty of hope.*

The book leaves open debates on issues that are only listed, or less argued, such as community health, organization health, family health, environmental health and institutions, the complementarity principle “deserve the love of your neighbor” with the principle “love your neighbour as yourself<sup>50</sup>”, the introduction of the principle of hope in economic science with the principle of rationality etc.

The value of the book, as we also consider, is that it succeeds to raise a number of problems for human and institutional spiritualization, starting from the spiritualization of education in an organic connection with science and the faith in the certainty of hope, from the perspective of harmony necessary to the transition in the century we are facing up, to a new era, that of practical responsibility for the health of all livings, replacing the principle of “knowledge is power” with the principle of “knowledge means wisdom”.

Conceived from the perspective of the new paradigm of all livings, the book also raises the issue of the spiritualization of economic science, policies and economic mechanisms of everywhere, starting from the principle that economy – as an environment created by man, should not be conceived to be but a living organism, part of the social organism, being also integrated in the micro-cosmos of our organism which is not only alive, but also aware of its position. As a result, economy is an alive organism, healthy or sick.

Spiritualization fights for the acute organic necessity of making individual better inside of him. His inner side is the place where the proper attitudes necessary to fulfil life under uncertainty circumstances are shaping themselves.

This book, if it is read, or more, understood, makes us quite aware of the problems of life lived in a community, the work we perform and the love we feel. It simply makes us think whether or not we are real people.

To conclude, we would like to suggest the reader to experience the space of the two authors from *Respiritualization – as a necessity*, opened by the high spirit academician – Gheorghe Păun, to *the Windows opened towards hearts*, from Platon’ vision, to the *Fascination of complementary biology*, based on nature and

society inside individual, to the interaction between *Living and survival*, the point where the true laws of coexistence and succession meet, to *Respiritualization – as a changeable thing*, from the perspective of the health of all livings, made up by people, communities, families, organisations and institutions, to the *Calls for Freedom*, inquired by our own nature revolution, to the *Challenges of economic education*, as a cry for the health of public and private business, to the *Undoubted reserves* where there is the consciousness of the truth about who we are, to the *Examination through self assessment*, when people are seized with their own assessment in terms of transition of meaning, to the *Spirituality of living*, as an alternative between „to have “ if „, to be”, to *Faith in the certainty of hope*, when freedom serves life fulfilment, to *Metanoia that purifies*, where there is the spirit of revolution in terms of expectations, to *Competition with themselves*, through which people build up the beauty of winning together with great sacrifice, to *The flowers of spiritualization in blossom everywhere*, the place where people learn to dream or hope, and understand that gratitude is the healthier human emotion which accomplish our transition through life.

As any beginning has an end, our interpretation is meant to reflect not of what the book says, but of who you are, what do you want from life, or what life wants from you, the fact that the transition through human life is unique and has an irreversible course that puts its stamp on the family spirit in which you were born, the community where you lived in, the country where you have survived or fulfilled the faith you have hoped of.

Considering the importance of the issues approached by the two professors mentioned above, we suggest that both authors and the publishing house should explore the possibility of translating the book into an international language so that the ideas expressed may enter in the circuit of contemporary debates.

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<sup>50</sup> To see Hans Selye, *Știință și viață*, Politică Publishing House, Bucharest, 1984, pp. 364-365



**Parag Khanna, *The Second World. Empires and Influence in the New Global Order*, New York, Random House, 2008**

Reviewed by Doris MIRONESCU\*

Parag Khanna is a young american scholar, trained in strategic thinking and political mapping at an impressive number of think-tanks in the U.S.A. and Europe. At the same time, for writing his international best-seller *The Second World*, he confesses to have travelled in almost all the countries onto which he applied his political expertise, acquiring firsthand knowledge of the realities in place. All these „letters of accreditation” may reassure the reader of Parag Khanna’s recent bestseller that the worldview deployed in his book is not only informed and bold, but also highly qualified.

*The Second World. Empires and Influence in the New Global Order* was published in 2008 by Random House; when its second edition appeared, the following year, eleven translations (including one in Romanian) had already appeared or were under way. The book presents itself as a thorough analysis of the geopolitical scene at the beginning of the 21st century, and at the same time it maintains the profile of an intellectual travelogue. It is not a description of lands and scenery, but of cultures with distinctive values that draw upon their economical and political evolution – although not in the overwhelming manner ascribed to them by the school of thought of Samuel Huntington. Its confessed model is Arnold Toynbee’s, *East to West: A Journey Around the World* (1958), but, while Toynbee wrote his memoirs of a travelling historian at the end of his career, as a summation of a lifetime experience, Parag Khanna chose to make his editorial debut with the fresh insights of an avid observer en route around the world.

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One of the immediately recognizable merits of Khanna's enterprise is that he never gets lost in the contemplation of picturesque scenery or custom. His attention is focused on the relevant details, and the particular references that he makes to a place or other he may have seen always serve to emphasize a certain point that his political analysis is making. Of course, the description of the shabby taxi-cabs in Egypt, of the poverty-stricken shackles in Georgia or of the bazaar atmosphere in the cities of Ferghana Valley do carry an emotional value, bringing the reader closer to the, otherwise, abstract political realities of these lands. But Khanna does not intend to compete with the literary qualities of a memoir such as Andrzej Stasiuk's *Travelling to Babadag*. He tries, instead, to capture some of the feeling of cultural specificity that is so characteristic of many of the countries situated in the second world.

„The second world” used to be, until twenty years ago, a general denomination of the countries in the Communist block, to distinguish them both from the „first world” in Western Europe and the USA, and from the „third world” of the poorer countries in Africa or South Asia, for the good favours of which competed the two aforesaid „worlds”. In fact, only the „third world” concept stuck, designating the countries fighting with poverty, and it forced a redefinition of the other two based solely on the criterium of wealth. But, since the „first world” remaining to express the image of prosperity that the West has always seen as befitting for itself, it remained unclear which country one might today characterize as „second world”. Indeed, the area ascribed to the second world is not easy to pinpoint, since the economical good fortune of a country is only conjunctural and has a tendency to dissipate, once the policies of the government go wrong. The second world has a fluid geography, as these countries can always ascend into the first world (as, one might say, has happened with the Eastern European countries that received EU membership in the years 2000) or crumble in the chaos of the third world (as it happens each time another country in, say, Central Asia is taken over by a dictator). The second world is a purgatory, but its importance is far greater, in Parag Khanna's opinion, than to serve as a gateway for the first world.

The idea Khanna starts his investigation with is that the conditions of existence of politics have changed in the last few decades. He sees the world as currently undergoing the effects of two combined, but not identical forces: globalization and geopolitics, often concurring, but always keeping in tension. Globalization brings, of course, peoples together and encourages dialogue between

spaces that used to be perceived as remote. But, on the other hand, it is a process no one can escape and, therefore, it changes the face of the world. Globalization can be used as a means of cultural communication, but it may also turn into a weapon. In short, globalization is the main reason why the world tomorrow may not resemble much the world today.

Parag Khanna's historical view might be called pragmatic, in that it rejects the diplomatic lingo of both the East and West and proposes instead concepts inspired by the 19th century Realpolitik. He chooses to regard the contemporary political world scene as a competition between empires: two of them already in place, and one emerging from the second world's grey area. The word „empire” appears as a metaphor for unified and centralized political power, so it probably should not always be taken at face value, for there is much difference between the actions of one great power and another. In Khanna's view, the empires struggle for domination of the areas around them. But, in the situation of a globalizing society, it is unclear what is near and what is remote. Therefore, the spheres of influence interfere, there appear overlapping areas, and competition ensues.

The only traditional empire of our world is the United States, maintaining, albeit with difficulty, a hegemonic position in several regions across the globe. Khanna considers, probably a little harshly, the „American way” of doing things as obsolete and ill-fated. The interventionism on American policy abroad, its commitment to democratization and its occasional use of armed force in conflict zones is considered by the author of *The Second World* as a method reminiscent of the Cold War era – and an efficient method, since it won that war. But, he insists, the powers in play have changed, and their political style does not allow room for the American traditional methods any more. It is possible that the author endorses a change in American politics, since his book was written in the last year of George W. Bush's Republican administration. And, indeed, the call for a new American way has been widely heard in this past two years in Washington.

America's direct method is firstly opposed by Europe's amiable and inclusive method. If the USA are working more or less directly towards their goal when it comes to unraveling a dictatorship or dismantling an enemy regime, Europe prefers to induce in its preferred targets the desire to belong to the EU. Europe is, in Parag Khanna's opinion, a „likable” empire, which presents itself as highly desirable to its neighbours in order to stimulate their pace towards democracy and the market economy, and then include them in its own

multinational financial and economical system. America takes the leaders of countries as interlocutors, but the European Union collaborates with the entire system. Europe does not wage wars. Its main concern is to make itself attractive through a perfectly functioning welfare state, so that the unruly regimes at its borders may „tame” and assort themselves to the superpower construction that is the EU. In several situations in recent history, the EU has made clear that it refuses to engage in battlefields and it prefers mutually profitable trade. The problem with Europe is that, at some points, it seems reluctant to embark on its imperial mission and prefers to stay at home in areas which, in the future, might appear crucial for its well-being. Consequently, Europe risks to remain, as Khanna puts it, just a „Christian club” in a world in which countries that confess other religions are playing more and more important roles.

The third and youngest empire of today is China. But its presence can be felt everywhere, as the „textile tsunami” and several other such Chinese tsunamis have reached, with devastating impact, the economies in Africa, South America, and South Asia. The Far Eastern superpower’s methods of political action are different from the other two empires’. China profits the most from today’s globalization, economically conquering whole areas with its formidable workpower and its abundance of low-cost (hence profitable) products of any kind. It matches this economic imperialism with a doctrine of political non-interventionism. Having been subjected for decades to all kinds of reproaches regarding its internal policies and its nenerous breeches of the Human Rights, China can now follow its economic interests in areas where the Americans and Europeans do not venture. China cooperates economically with some of the most harsh dictatorships in the world, claiming that it will not „get involved” in their internal affairs. Thus, it can always present itself as an alternative to NATO or to the IMF, trading political acceptancy for new markets for its products. This way, China can be regarded as the opposite of the USA in terms of political interventionism, borrowing something from European international politics, but acting in a completely different fashion.

Parag Khanna’s book is a survey of the countries situated in between the American interests, the European will for expansion and the Chinese need to grow in order not to collapse. Taking the pulse of cities like Bishkek, Cairo or Singapore, the author is trying to identify the game of influence that takes place here and to guess its probable outcome. Of course, Khanna doesn’t practice futurology. He is not concerned with getting the answer right and being confirmed by the years to

come. Faithful to Toynbee's convictions, he seeks a truthful image of the state of facts, i.e. of the major empires competing over influence in a certain area of the world, and from there he tries to deduct the possible outcome. His conclusions are always ambivalent, as they should be, since the future cannot be foretold. It is not a book of prognoses, but of analyses.

The world survey in *The Second World* begins with the regions in the vicinity of the European Union, where Parag Khanna detects a constant pressure towards rentability and the reign of law from the EU, but he also discovers an interesting game played by one of the key second-world countries, Turkey. The Turks accept, with reluctance, EU regulations, but at the same time let themselves be encouraged by the American example to try and formulate their own „Turkish way“. The country has to keep pace with its westernized diaspora, while resisting the temptation of Islamic fundamentalism, and facing the opposition of the Kurd minority that feels encouraged by the existence of the semi-autonomous Kurdistan in the North-West of crumbling Irak. The economic power of Turkey is felt at the Black Sea, where it may play an important part in turning this 19th century „Russian lake“ into an „European lake“, by enabling the Caucasus energetic resources to get through to the West via a pipeline beyond the reach of Gazprom. Very insightful comments are made about the disponibility of Bulgarian tourism towards their prosperous Turkish neighbours (a clever pun is employed here: „Istanbulgaria“), or about the chances of the poor former-Soviet republics in the Caucasus to salvage themselves from ruin thanks to Europe's need for natural gas. Parag Khanna may be excessively optimist when he entitles one of his chapters „the Russia that was“. Even if Russian hegemony has withered in a large part of its earlier „sphere of influence“, it nevertheless still retains an undisputed authority even in some places that, in the last decade, went through an American-inspired „colour revolution“. But Russia's power is seriously questioned in Asia, especially in the Far East, where China moves in with its huge working population; Chinese guest workers are physically occupying the deserted spaces in the Eastern steppe that hold vast forests and large deposits of gold, copper or diamonds.

Another one of the nodal points in the second world is the Asian „heartland“ (a term coined by Halford John Mackinder in 1904), situated more or less in the same place where Tamerlane's „Great Silk Road“ (Ferdinand von Richthofen, 1877) used to lie. It is here, in the republics of Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, Pakistan and others, that the main routes for

communication still function for internet optic-cable and petrol pipelines, drugs and weapons traffic. It is in these areas, in the multicultural Ferghana Valley and on the peaks of the Himalaya, on the dried-up shores of the Caspian and the Aral Sea, that the contemporary „Great Game” (Arthur Conolly, 1829) is being conducted, which was once played by the two foremost empires of the 19th century, British and Russian. The reader may enjoy, unsuspectingly, Parag Khanna’s preference for old political metaphors. But the author is not merely playing on words. He is actually making clear that Central Asia is a turning point for nowadays politics, because it is easily escaping the Russian space and drifting into another one, where American and European hegemony hesitates to tread. To put it in other words, it is China’s playground now, and nothing spells this better than the fact that the former main boulevard in Bishkek, Kyrgyzstan, once called „Vladimir Ilyich Lenin”, was converted in 1997 into „Deng Xiaoping”, in honor of the great neighbour from the East. Few of the countries from the former Soviet Union can check the Chinese overwhelming influence; one of them is Kazakhstan, which uses its oil and natural gas resources to make itself attractive for more actors than just one: Russia, the EU, and China. For the others, it appears that a future with China is more attractive than anything else, and Chinese projects are already designing Central Asian infrastructure with a boldness matched only by the EU, at the other end of the „world-island”. It is a five-chapter strategy that China unfolds here: a „Transcontinental Eurasiatic Bridge”, rivaling the Russian Transsiberian; a railroad and a pipeline through Kazakhstan to the Caspian Sea; modernized roads through the mountain passes of Kirghizstan, Tashkent and Uzbekistan; and an extension of the Karakoram highway, through Pakistan, to the port of Gwadar at the Arabian Sea. All these projects can help the regions’s crumbling economies, at the same time helping China expand in the former Russian sphere of influence and connect with the petrol-filled countries in the Persian Gulf. But the majority of these countries are corrupt and totalitarian, and the Chinese, who are not very fond of democracy themselves, refuse to address this issue.

South and Central America used to be regarded as „America’s back yard”, not to be interfered with by anybody else. But, given the social turmoil in some of these countries, the rise of Brasil and Chile and the ascent of dictator Chavez in oil-rich Venezuela, American hegemony has become questionable, or at least Parag Khanna choses to see it this way in order to undeline the main challenges that American foreign policy has to face nowadays. Due to globalization of commerce

and the rapidity of water routes in the Pacific Ocean, China stepped in with its huge amount of cheap merchandise and annihilated the national industries of textiles, electronic components and so on. Faced with competition so close to home, it is hard to say how America will react, since it has some economic problems of its own.

North Africa is seen by Khanna as „Europe’s back yard”, a vision endorsed by Arnold Toynbee, who preferred to talk of an unique „Mediterranean civilisation” spreading on the northern, southern and eastern shores of the intercontinental sea. Indeed, when looking at things in historical perspective, considering the actions of the Roman Empires and the quest for colonies in the 19th century, such a vision is legitimate. Parag Khanna warns that Europe should be concerned in any way with the fate of this region, since it receives a large number of migrants every year and it is in its interest to turn them into qualified workers, instead of fanatic enemies. Given the chronic economic problems in Subsaharan Africa, the EU doesn’t venture this far, but the Chinese, always in search for markets and energy, are already making their presence felt.

The Arab world, both in Maghreb (north of Africa) and in Mashreq (the so-called „Middle East” – a label Khanna rejects, as it describes the 18th century European sailors’ perception about the ports where they could make a stop on their way to the Eastern Indies), is very tense at the moment, but Islamic fundamentalism is only part of the problem. From Egypt to Pakistan – which is a Muslim country, even though not an Arab one –, the population is confronted with what might be called a „demographic bomb”. Khanna paints a convincing picture when he evokes the many youths gathered in packs at street corners, from Cairo to Lahore, showing off their mobile phones, while simply waiting for anybody to come along and offer them a job. For these young people, an urgent solution is required. The situation of the Gulf countries, so rich in resources, yet lacking in infrastructure and uninterested in developing alternative national industries, for the time when the oil will be finished, is also dramatic. But energy resources are a magnet for all, therefore America and China are already present here; and, while the USA has the advantage of military power, China’s offer of political non-interventionism seems more appealing.

Finally, in South-East Asia the Chinese hegemony is at work at its most subtle: China is „seducing” the third-world countries around it, South Korea, Japan, and Singapore. It engages intense economic relations with each of these countries,

creating a system of international trade which, in time, comes to rely heavily on the Chinese workpower. Meanwhile, the second-world countries in the region try to deal with this situation through „a diplomacy of smiling in all directions”, as Khanna puts it when he discusses the foreign policy initiatives of Thailand. Keeping their options open, these countries are preparing for any possible outcome in the Great Game of the hyperpowers.

The countries of the second world are not little Davids fighting the Goliaths of today. Parag Khanna’s vision is much more relativist and less inclined to embrace a mythological way of thinking. On the other hand, in his travels, the authors may have seen enough oddities – like the character in the Romanian tale *The Human Stupidity* – to engage in designing a pattern that would fit all patterns. One thing is to see Turkmen dictator Saparmurat Niyazov’s gilded statue that revolves with the sun, another is to meet the Homo Balcanicus in former Yugoslavia, „with a thuggish aspect, pumping his convertible car or his motorcycle with a (probably stolen) European number”. One thing is to listen to the muezzin calling people to prayer in Jordan, while a bartender turns the TV louder for his customers, and another to witness Chinese soldiers’ martial arts training near the ancient stupas in Lhasa and to conclude, as Parag Khanna brilliantly does, that „a bamboo curtain has fallen over Tibet and Xinjiang”. All these images are, in a way, more important for the reader or *The Second World* than the political analyses themselves. They all describe the feeling of a very lively and sometimes dramatically instable world, trying to cope with the conditions of existence and struggling to find stability. Parag Khanna wrote an eminently readable, very insightful book, that helps one not only understand, but also *see* the world around oneself.