



<http://researchspace.auckland.ac.nz>

## ***ResearchSpace@Auckland***

### **Copyright Statement**

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

This thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- Any use you make of these documents or images must be for research or private study purposes only, and you may not make them available to any other person.
- Authors control the copyright of their thesis. You will recognise the author's right to be identified as the author of this thesis, and due acknowledgement will be made to the author where appropriate.
- You will obtain the author's permission before publishing any material from their thesis.

To request permissions please use the Feedback form on our webpage.

<http://researchspace.auckland.ac.nz/feedback>

### **General copyright and disclaimer**

In addition to the above conditions, authors give their consent for the digital copy of their work to be used subject to the conditions specified on the [Library Thesis Consent Form](#) and [Deposit Licence](#).

### **Note : Masters Theses**

The digital copy of a masters thesis is as submitted for examination and contains no corrections. The print copy, usually available in the University Library, may contain corrections made by hand, which have been requested by the supervisor.

**Enhancing the Understanding of Corruption  
through System Dynamics Modelling:  
A Case Study Analysis of Pakistan**

**Muhammad Aman Ullah**

**A thesis submitted in partial fulfilment of the requirements for the degree of  
Doctor of Philosophy,  
The University of Auckland, 2012.**

## Abstract

Corruption is an extensively studied but still a contested phenomenon (Andvig et al. 2000, Kaufmann et al. 1999). Corruption is ubiquitous and has serious affects in developing countries. Over the past few decades, many studies of corruption have been carried out. These studies have mainly focussed on specific characteristics such as: economic issues, legal issues, social propositions, impact on national development, and in relation to economic policy. The rationale of this research is to build initial system dynamics models of corruption so that these models can extend our understanding of corruption and act as an input to future policy-making on corruption.

System dynamics is an approach to modelling and computer simulation of complex systems in social and physical sciences (Forrester 1958). The field has been extended over the last 45-50 years to model new problems, such as state instability, supply chain management, to dynamics of economic growth, software development, and to analyse different policies for nation-building etc. System dynamics modelling allows researchers to discover 'hidden' dynamics. Moreover, system dynamics provides the analyst an increased level of flexibility, as system dynamics modelling uses both theoretical understanding, as well as empirical data collection. "An important step in system dynamics modelling is to obtain the wealth of information that people hold in their heads. The mental data base is a rich source of information about the parts of a system, about the information available at different points in a system, and about the policies being followed in decision making" (Forrester 1991).

Our research aims to arrive at a more nuanced understanding of corruption through understanding everyday experiences of corruption. The data for the qualitative analysis comes from 30 interviews conducted in (Islamabad) Pakistan. The specific aim of this research is to investigate how our understanding of corruption can be extended by using a system dynamics approach. This is achieved by the use of simulation modelling to explore how the social system of corruption develops its stable macro-state. Systems dynamics model of corruption developed in this study would be of use to policy makers and non-governmental organisations in understanding the complex nature of corruption.

**Keywords:** Case Study, Corruption, Developing Countries, Pakistan, Perception, Simulation, System Dynamics, Thematic Analysis.

---

*This thesis is dedicated to my mother  
and to the memory of my father, Noor Muhammad Haleem,  
(1<sup>st</sup> January 1938 – 13<sup>th</sup> May 2006)*

## Acknowledgements

First and foremost I would like to thank Almighty Allah for enabling me to achieve what I wanted.

I would like to extend my gratitude to Associate Professor Tiru Arthanari my supervisor and Prof. Cathy Urquhart my co-supervisor, who I consider my mentors. Their enthusiasm and encouragement, prompt reviews and praise, as well as their generous guidance were essential and much appreciated. Thank you to my 2<sup>nd</sup> co-supervisor Dr. Anson Li for his positive attitude toward this work. One simply could not wish for a better or friendlier supervisor/co-supervisor. Numerous research participants have generously given their time to be interviewed. Without you this research would not have been possible — thank you!

Higher Education Commission of Pakistan provided a PhD scholarship which was critical in enabling me to study. I would like to acknowledge The University of Auckland for having given me the opportunity to conduct my doctoral studies. Moreover, I am convinced that I made the right decision in coming to such a prestigious academic centre. I would also like to thank the Postgraduate Research Office, University of Auckland Business School for providing additional funding that allowed me to conduct my interviews in Pakistan for my study and to attend conferences to present my research at international forums.

Many thanks go out to my advisors, Dr. Sholeh Maani, Dr. Kenneth Jackson, and Dr. Cris Shore. Your patience, support, and guidance have been instrumental in my thesis progress and personal development. Countless anonymous referees of conference and journal paper submissions are owed thanks for valuable feedback throughout my PhD journey.

Closer to home, I would like to thank a number of faculty staff and others at the University of Auckland Business School (UABS): I am very grateful to Prof. Michael Myers, Assoc. Prof. David Sundaram, Dr. Fernando Beltran, Dr. John Montgomery, Dr. Matthew Ryan, Susanna Yau, Gabrielle Murphy and Kamla Singh for being supportive during my stay in UABS.

Let me also say 'thank you' to the following people Rod MacDonald, Rockefeller College of Public Affairs and Policy at the University at Albany and Dr. Ines Winz for their intuitive comments and valuable input on system dynamics model, and Sarah Davie, iSee Systems, Inc. USA for providing me technical help for simulation modelling. I am also thankful to Ms. Carole Kametz from Political Risk Services, New York, who gave me data support for my research work. However, I alone hold the responsibility for any errors and omissions, which are of course not deliberate.

I am grateful to my friends and PhD fellows at the University of Auckland: Yousaf, Faheem, Faisal, Jibran, Zafar, Jawad, Bashir and Amer for providing me emotional support, encouragement and making my stay in New Zealand so memorable. In my daily work I have been blessed with a

friendly group of fellow PhD students: especially Farhaan, Christoph, Lincoln, Laleh, Pari, Ranjan, Amira, Arzoo, Ionna and Samsul.

I gratefully acknowledge support from Bill English, Postgraduate Advisor at the department for providing support in proofreading my thesis document and giving me intuitive feedback. Special thanks to my sweet friends Sarah Lawrence and Pia Mckay for proofreading chapters of my thesis and conference papers on and off.

Last but not least, very special thanks go out to my parents and my siblings for all the love and energy put toward being patient and supportive of me throughout this process! Thank you so much. Especially to my mother; she constantly encouraged me to stay concentrated on my studies, no matter the predicaments she might be experiencing while her son was more than 14,000 kilometres away, at the other side of the hemisphere. I appreciate her great self-control in adversity.

ABSTRACT .....	II
ACKNOWLEDGEMENTS .....	IV
TABLE OF CONTENTS .....	VI
LIST OF FIGURES.....	XI
LIST OF TABLES .....	XII
CO-AUTHORSHIP FORM — I.....	XIII
CO-AUTHORSHIP FORM — II.....	XIV
1 INTRODUCTION.....	1
1.1 Studying Corruption.....	1
1.1.1 Defining Corruption.....	3
1.2 Systems Approach .....	3
1.2.1 Research Focus .....	4
1.3 Objectives and Research Questions .....	4
1.4 Overview of the Thesis.....	5
1.5 Conference Papers and Proceedings .....	6
2 LITERATURE REVIEW.....	7
2.1 Theories on System Dynamics.....	7
2.2 Theories on Corruption.....	9
2.2.1 Economic Theories on Corruption.....	10
2.2.2 Development Studies Theories on Corruption .....	15
2.3 Corruption in Pakistan .....	16
2.3.1 The National Anti-Corruption Strategy in Pakistan.....	18
2.4 Governance Issues in Pakistan.....	19
2.5 Economic Problems in Pakistan.....	22

2.6	Systems Studies on Corruption .....	25
3	METHODOLOGY .....	30
3.1	Research Process .....	31
3.1.1	Ontological and Epistemological Elements .....	32
3.1.2	The Interpretivist Approach .....	33
3.2	Phase I — A Case Study Approach .....	34
3.2.1	Research Strategy .....	34
3.2.2	Data Collection .....	36
3.2.2.1	Participants in the Case Study .....	38
3.2.3	Difficulties in Studying Corruption .....	39
3.3	Thematic Analysis .....	41
3.4	Phase II — Systems Approach .....	44
3.5	Soft System Methodology / Systems Thinking .....	46
3.5.1	Research Process of System Dynamics Modelling .....	48
3.5.1.1	Problem Articulation .....	49
3.5.1.2	The Dynamic Hypothesis .....	49
3.5.1.3	The Formulation of a Simulation Model .....	49
3.5.1.4	Model Testing .....	49
3.5.1.5	Policy Formulation and Evaluation .....	50
3.5.2	Fundamentals of System Dynamics Modelling .....	50
3.5.2.1	Feedback .....	50
3.5.2.2	Causal Loop Diagram .....	50
3.5.2.3	Stock and Flow .....	51
3.5.2.4	Dynamic Behaviour .....	54
3.5.2.5	Simulation Modelling .....	55
4	FINDINGS FROM PHASE — I .....	57
4.1	Analysis by Themes .....	57
4.2	Dominant Codes .....	60
4.3	Perception of Corruption .....	61

4.3.1	Aspects of Corruption .....	63
4.3.2	Level of Corruption .....	64
4.3.3	Money Matter .....	65
4.3.4	Causes of Corruption.....	66
4.4	Governance .....	67
4.4.1	Aspects of Governance .....	68
4.4.2	Lack of Political Stability .....	69
4.5	Effective Judiciary.....	71
4.5.1	Aspects of Effective Judiciary.....	72
4.5.2	Lack of Accountability.....	72
4.5.3	Rule of Law.....	73
4.6	Values.....	74
4.6.1	Ethical and Moral Values.....	74
4.6.2	Religiosity .....	75
4.7	Poverty .....	75
4.7.1	Aspects of Poverty.....	76
4.7.2	Income Inequality .....	77
4.8	Social Aspects.....	78
4.9	Transparency in International Negotiations and Funding.....	79
4.10	Regulations to Create Jobs .....	80
4.11	Size of the Government and/or Government Expenditure .....	82
4.12	Economic Health of a Country.....	83
4.13	Discussion .....	84
5	SYSTEM DYNAMICS MODELLING AND SIMULATION.....	87
5.1	Transition from Econometric Modelling to System Dynamics Modelling .....	88
5.1.1	Why System Dynamics Modelling .....	90
5.2	A Systems Map or Rich Picture.....	92
5.2.1	Economic Factors.....	92
5.2.2	Political and Judicial Factors .....	93

5.2.3	Social and Cultural Factors .....	95
5.3	The High-Level View .....	96
5.3.1	System Dynamics Modelling – Drilling Deeper .....	99
5.3.1.1	Key Variables .....	99
5.3.1.2	Feedback Loops Economic and Social Factors .....	100
5.3.1.3	Feedback Loops Legal and Political Factors.....	101
5.3.2	Behaviour over Time .....	102
5.3.3	Formulating the Model.....	105
5.3.4	Result for Simulation .....	113
5.3.4.1	Model Validation .....	116
5.4	System Dynamics Model: Analysis and Discussion .....	117
6	CONCLUSION.....	124
6.1	Summary of Major Findings .....	124
6.1.1	Thematic Analysis .....	125
6.1.2	System Dynamics Modelling .....	127
6.2	Theoretical and Practical Contribution .....	128
6.2.1	Theoretical Contribution .....	129
6.2.2	Practical Contribution .....	129
6.3	Limitation of the Study.....	130
6.4	Future Research Avenues.....	130
	APPENDIX I – INTERVIEW SCHEDULE .....	132
	APPENDIX II – APPROVAL FROM THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE.....	141
	APPENDIX III – PARTICIPANT INFORMATION SHEETS.....	142
	APPENDIX IV – CONSENT FORM.....	150
	APPENDIX V – BEHAVIOURAL TYPES .....	155
	APPENDIX VI – CAUSAL RELATIONSHIPS OF THE VARIABLES .....	157

APPENDIX VII – TRANSFORMATION OF CAUSAL LOOP DIAGRAM INTO STOCK AND FLOW DIAGRAM.....	160
APPENDIX VIII – DEFINITION OF ICRG INDICES.....	169
APPENDIX IX – EQUATIONS OF SYSTEM DYNAMICS MODEL.....	174
APPENDIX X – SYSTEM DYNAMICS MODEL AT EQUILIBRIUM.....	180
APPENDIX XI – TEST OF MODEL BEHAVIOUR .....	182
REFERENCES.....	183

## List of Figures

Figure 2.1: Forms of Corruption.....	17
Figure 2.2: Characteristics of Good Governance.....	21
Figure 2.3: A Simple Model of Corruption.....	27
Figure 2.4: The Influence of Corruption on Economic Growth.....	28
Figure 3.1: Phases of Research. ....	31
Figure 3.2: The Research Process.....	32
Figure 3.3: Approaches to Coding.....	43
Figure 3.4: System Dynamics Modelling Iterative Process.....	49
Figure 3.5: Behavioural Types of Systemic structures.....	54
Figure 5.1: A General View of Corruption and Economic Factors.....	93
Figure 5.2: A General View of Corruption, Political and Judicial Factors.....	94
Figure 5.3: A General View of Corruption, Social and Cultural Factors.....	95
Figure 5.4: High-level Diagram of System Dynamics Model of Corruption.....	98
Figure 5.5: Feedback Loops of Economic and Social Factors.....	101
Figure 5.6: Feedback Loops of Legal and Political Factors.....	102
Figure 5.7: Corruption Trend in Pakistan (1984-2010).....	103
Figure 5.8: Trend of Political and Economic Risk Indices in Pakistan.....	103
Figure 5.9: Trend of Political Risk Indices in Pakistan.....	103
Figure 5.10: Economic Growth and Government Expenditure in Pakistan.....	104
Figure 5.11: Openness of Pakistan's Economy.....	104
Figure 5.12: Income Inequality Trend in Pakistan (1984-2010).....	104
Figure 5.13: Inflation in Pakistan (1984-2010).....	105
Figure 5.14: Gross Domestic Product Trend in Pakistan.....	105
Figure 5.15: Stock and Flow Diagram of Corruption Model with Political and Judicial Factors.....	108
Figure 5.16: Stock and Flow Diagram of Corruption Model with Social and Economic Factors.....	109
Figure 5.17: Reference Mode for Corruption, Level of GDP and Income Inequality.....	110
Figure 5.18: Effect of Corruption on Level of GDP.....	111
Figure 5.19: Level of Corruption.....	114
Figure 5.20: Level of Gross Domestic Product.....	115
Figure 5.21: Income Inequality.....	115

## List of Tables

Table 2.1: Corruption Cases in Pakistan.....	24
Table 3.1: Key Characteristics of Case Studies.....	35
Table 3.2: Interviewee Information.....	38
Table 3.3: Four Stages of Thematic Analysis.....	41
Table 3.4: Advantages and Disadvantages of Thematic Analysis.....	44
Table 3.5: The Five Phase Process of Systems Thinking and Modelling.....	47
Table 3.6: Rules of Causal Loop Diagram.....	51
Table 3.7: Stock and Flow Elements.....	52
Table 3.8: System Dynamics Models in Addressing Different Problems.....	55
Table 4.1: Grounding the Model — Thematic Analysis Grid.....	59
Table 4.2: Themes and Dominant Codes.....	60
Table 4.3: Thematic Analysis Grid — Corruption.....	61
Table 4.4: Causes of Corruption.....	66
Table 4.5: Thematic Analysis Grid — Governance.....	68
Table 4.6: Thematic Analysis Grid — Effective Judiciary.....	71
Table 4.7: Thematic Analysis Grid — Values.....	74
Table 4.8: Thematic Analysis Grid — Poverty.....	76
Table 4.9: Thematic Analysis Grid — Social Aspects.....	79
Table 4.10: Thematic Analysis Grid — Transparency in International Negotiations and Funding.....	80
Table 4.11: Thematic Analysis Grid — Regulations to Create Jobs.....	81
Table 4.12: Thematic Analysis Grid — Size of the Government.....	83
Table 4.13: Thematic Analysis Grid — Economic Health of a Country.....	84
Table 5.1: Comparison of Econometrics and System Dynamics.....	91
Table 5.2: Key Variables of the Corruption Model.....	100
Table 5.3: Model Initial Minimum, Maximum Values and Variable Dimensions.....	107
Table 5.4: Equations for the Simulation Model.....	112
Table 5.5: Test for Validity of SD Model.....	116
Table 5.6: Causes of Corruption in Pakistan.....	119
Table 5.7: Pakistan's Ranking on Corruption Perception Index.....	120
Table 5.8: National Corruption Perception Survey.....	121

# Co-Authorship Form — I



## Co-Authorship Form

Graduate Centre  
 Clock Tower – East Wing  
 22 Princes Street, Auckland  
 Phone: +64 9 373 7599 ext 81321  
 Fax: +64 9 373 7610  
 Email: postgraduate@auckland.ac.nz  
 www.postgrad.auckland.ac.nz

This form is to accompany the submission of any PhD that contains research reported in published or unpublished co-authored work. **Please include one copy of this form for each co-authored work.** Completed forms should be included in all copies of your thesis submitted for examination and library deposit (including digital deposit), following your thesis Abstract.

Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

Qualitative portion of Chapter No. 2,3, and 4  
 Ullah, M. A., Urquhart, C., and Arthanari, T. S. (2011, September). Perceptions of Corruption in Pakistan: A Case Study. Paper presented at the Australian and New Zealand Society of Criminology Conference (ANZSOC), Geelong, Australia.

Nature of contribution by PhD candidate	Wrote the Text, incorporated the suggestions from the supervisor and co-supervisor. Presented the paper in the conference.
Extent of contribution by PhD candidate (%)	60

### CO-AUTHORS

Name	Nature of Contribution
Cathy Urquhart	STRUCTURED + EDITED PAPER. REWRROED FINDINGS, DISCUSSION, CONCLUSION
Tiru Arthanari	Read the draft of the paper and suggested changes to presentation and inclusion of certain connections to the overall research project.

### Certification by Co-Authors

The undersigned hereby certify that:

- ❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
- ❖ in cases where the PhD candidate was the lead author of the work that the candidate wrote the text.

Name	Signature	Date
Muhammad Aman Ullah		14/02/2012
Cathy Urquhart		20/2/2012
Tiru Arthanari		15/02/2012

# Co-Authorship Form — II



## Co-Authorship Form

Graduate Centre  
 Clock Tower – East Wing  
 22 Princes Street, Auckland  
 Phone: +64 9 373 7599 ext 81321  
 Fax: +64 9 373 7610  
 Email: postgraduate@auckland.ac.nz  
 www.postgrad.auckland.ac.nz

This form is to accompany the submission of any PhD that contains research reported in published or unpublished co-authored work. **Please include one copy of this form for each co-authored work.** Completed forms should be included in all copies of your thesis submitted for examination and library deposit (including digital deposit), following your thesis Abstract.

Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

Qualitative System Dynamics Model in Chapter 4 and Some portion of Chapter 2  
 Ullah, M. A., and Arthanari, T. S. (2011, July). Using a Qualitative System Dynamics Approach to Investigate Perceptions of Corruption. Paper presented at the 29th International Conference of the System Dynamics Society, Washington DC, USA. Retrieved from <http://www.systemdynamics.org/conferences/2011/proceed/papers/P1223.pdf>

Nature of contribution by PhD candidate	Wrote the Text, incorporated the suggestions of the supervisor. Collected the qualitative data through interviews.
Extent of contribution by PhD candidate (%)	60

### CO-AUTHORS

Name	Nature of Contribution
Tiru Arthanari	Advocated the system dynamic approach and ensured the model built reflects the findings of the qualitative data input and literature survey. Presented the paper at the conference.

### Certification by Co-Authors

- The undersigned hereby certify that:
- the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
  - in cases where the PhD candidate was the lead author of the work that the candidate wrote the text.

Name	Signature	Date
Muhammad Aman Ullah		14/02/2012
Tiru Arthanari		15/02/2012

# 1 Introduction

*“But seek the abode of the hereafter in that which God Almighty has given you, and forget not your portion of the world, and be kind even as God Almighty has been kind to you, and seek not corruption in the earth; for God Almighty loves not corrupters”.*

Surah Al-Qasas, Chapter No. 28, Verse 77, (Holy Quran)

This chapter sets up the study overall. The subject area of corruption is introduced and placed in an historical context. This case study research used mixed methods, and the different knowledge areas within which the research has been positioned are briefly introduced. This is followed by a description of the research objectives guiding this study, and how these translate into focused research questions. Short synopses of the individual chapters of the thesis are presented next, followed by a list of research publications that have arisen from this work.

## 1.1 Studying Corruption

Over the past few decades many studies of corruption have been carried out (Leff 1964, Huntington 1968, Friedrich 1972, Nye 1967, Mauro 1995, Lambsdorff 1999, Treisman 2000 and Mahrwald 2009). These studies have mainly focussed on specific characteristics such as: economic issues, legal issues, social propositions, the impact on national development, and the relationship to policy making. Theoretical considerations of corruption have emphasised econometric modelling, game theory, and similar mathematical approaches. These approaches, to be analytically tractable, have addressed only particular subsets of a systematically corrupt system (Dudley 2000).

Corruption is one of the complex phenomena in social systems which should not merely be related to economical aspects, but with many other social and anthropological aspects. In most

developing countries today, corruption is widespread and part of everyday life. Society has learned to live with it, even considering it, fatalistically, as an integral part of their culture. Not only are public or official decisions – for instance, on the award of government contracts or the amount of tax due – bought and sold, but very often access to a public service or the exercise of a right, such as obtaining civil documents, also has to be unofficially paid for.

Corruption is an extensively studied but still a contested phenomenon; as there is still much disagreement among researchers (Andvig et al. 1991, Kaufmann and Wei 1998). Corruption is ubiquitous and has serious affects in developing countries. Research on corruption is a vital aspect of understanding the dynamics of corruption so that anti-corruption strategies might be effective.

Researching corruption via its perception is a useful way of researching corruption. Even though it remains open to criticism, it is usually assumed that perception of corruption is an approximate indicator of the real level of corruption (Lambsdorff 1999). In this study, I aim not to measure a level of corruption, but to achieve a more nuanced understanding of what corruption might mean as it is experienced by people on an everyday basis in Pakistan.

Pakistan is listed as one of the more corrupt countries in the world,<sup>1</sup> but it is now going through a transition period that may allow reform to be more easily introduced. In Pakistan, the 1999 National Accountability Ordinance set up a new agency specifically to fight corruption. In October 2002, Pakistan's Cabinet approved a National Anti-Corruption Strategy (NACS) that identified areas of pervasive corruption and recommended measures and reforms to combat corruption. Under the legislation, giving and accepting bribes are criminal acts punishable by confiscation of property, imprisonment, recovery of ill-gotten gains, dismissal from governmental service, and reduction in governmental rank. Yet, corruption still remains widespread in Pakistan, especially in the areas of government procurement, international contracts, and taxation.

Increasingly, corruption has become an election issue in numerous countries. Moreover, corruption scandals helped unseat governments in Ecuador, Brazil, India, and Italy and have shaken long-entrenched ruling parties in Japan and Mexico. In addition, the surge in privatization, especially in Latin America and Eastern Europe, has frequently been accompanied by corruption where political insiders were able to purchase state enterprises at prices far below-market values. Endemic corruption calls for radical political reforms, a system of checks and balances, and deep democratisation.

---

<sup>1</sup> According to the Transparency International ranking, Pakistan is ranked 135<sup>th</sup> out of 183 countries ranked from best to worst, while New Zealand is the cleanest country using the 2011 Corruption Perception Index.

### 1.1.1 Defining Corruption

Corruption is conventionally understood and referred to as the private wealth-seeking behaviour of someone who represents the state and public authority. It is the misuse of public resources by public officials, for private gains. The decisive role of the state is reflected in most definitions of corruption, which will define corruption as a particular and perverted state-society relationship. The encyclopaedic and working definition used by the World Bank (1997), Transparency International (1998) and others is that corruption is *the “abuse of public power for private benefit (or profit)”*. Another widely used description is that corruption is a transaction between private and public sector actors through which collective goods are illegally converted into private (Heidenheimer et al. 1989). This point is also emphasised by Rose-Ackerman, who says corruption exists at the interface of public and private sectors (Rose-Ackerman 1978).

Nye (1967:416) defines corruption as *“behaviour that deviates from the formal duties of a public role (elective or appointive) because of private-regarding (personal, close family, private clique) wealth or status gains”*. An updated version with the same elements is the definition by Khan (1996:12): corruption is *“behaviour that deviates from the formal rules of conduct governing the actions of someone in a position of public authority because of private-regarding motives such as wealth, power, or status”*.

In general, corruption is defined as the abuse of authority and power entrusted to someone, to gain self-benefit, solicited from the third party pursuing benefit from it (World Bank 1997, Transparency International 1999 and Andvig et al. 2000). Corruption has been identified by the World Bank, the IMF, the United Nations and other international organisations as a major obstacle to development, growth and social and political stability.

## 1.2 Systems Approach

A systems approach can be used in understanding corruption from a broader perspective. Theoretically, we can establish an open system<sup>2</sup> by taking a systems approach. With a systems approach we can develop a model to explore causes and consequences of corruption in any society. Corruption affects social and economic systems in a negative/positive way, which can be seen by using systems simulation, collecting data from the people working in different public and private organisations.

The application of systems theory is called system analysis (Gharajedaghi 1999). One of the major tools of systems analysis is systems thinking. Basically, systems thinking is a way of viewing systems from a broad perspective that includes seeing overall structures, patterns and

---

<sup>2</sup> Open systems refer to systems that interact with other systems or the outside environment (Checkland et al. 1999).

cycles, as well as connections and disconnections in systems, rather than seeing only specific events in the system. This broad view can help us quickly identify the real causes of issues in organisations and know just where to work to address them. Systems thinking has produced a variety of principles and tools for analysing and changing systems (Boczko 2008).

Human endeavours are bound by invisible fabrics of interrelated actions, which may take seconds to years to fully play out their effects on each other. Systems thinking provides tools to make the full patterns clearer and to help us see how to change them effectively (Checkland 1981). It is a unique approach to problem solving, in that it views certain 'problems', e.g. corruption, as part of the overall system. So focusing on these outcomes will only further develop the undesired element or problem (Kim 1999). The only way to fully understand why a problem or element occurs and persists is to understand the part in relation to the whole. Standing in contrast to Descartes' scientific reductionism and philosophical analysis, it proposes to view systems in a holistic manner. Consistent with systems philosophy, systems thinking concerns an understanding of a system by examining the linkages and interactions between the elements that comprise the entirety of the system (Midgley 2003). The previous discussion raises questions about the genuine benefits a systems approach can offer to study corruption. We quote a cogent statement to initiate the definition of the problem that guides this research:

*“Corruption literature provides a rich source of data and theory which can serve as a foundation for system dynamics models of corruption including, mathematical sub-models and typologies of corrupt systems, narratives of instances of corruption, and proposed remedies. An overall paradigm, allowing us to consider, in a holistic way, the many sub-systems of corruption have not been developed”.*

(Dudley 2000)

### **1.2.1 Research Focus**

This research mainly focuses on individual perceptions of corruption to gain an understanding of corruption. This perspective is related to my interest in the study of individual perceptions of those economic, social or cultural processes that have an overwhelming presence in individuals' daily lives. The thematic analysis approach is used to analyse qualitative data gathered from interviews. In this study we try to understand the issue of corruption in depth by using System Dynamics Modelling (SDM) by using qualitative research methods to analyse the data and provide a foundation for the SDM. Themes that come from qualitative data analysis are operationalised in a SDM.

## **1.3 Objectives and Research Questions**

The main objective of this study is to develop a logical theoretical framework which can be used to study corruption dynamics. This research will explore and study this topic by using a systems approach to build a general structural model of corruption, gained through computational simulations on qualitative data collected from Islamabad (Pakistan). This model aims to see

corruption from a new perspective. An attempt has, therefore, been made in this research to understand the problem of corruption, law and order, social, cultural, economic problems and political instability through a systems approach. This will be achieved by the use of simulation modelling to explore how the social system of corruption develops its stable macro-state. The conceptualisation of corruption used in this thesis is that it is a social phenomenon, which involves public dealing in general; manifested as a social system of corruption that affects all other systems in one way or another.

This research aims to explore the following issues in more depth:

General Research Question:

- How can our understanding of corruption be extended by using a system dynamics approach?
- What are the perceptions of people in Pakistan about their everyday experiences of corruption?

Specific Research Questions:

- What would a system dynamics model of corruption in Pakistan look like?
- What are the contributions of such a model?

The ultimate goal of this work is to assist in the development of a logical theoretical framework which can be used to examine the dynamics of corruption. While it is difficult to judge the ultimate effect such a modest activity can have on actual reform of corrupt systems, without a firm logical framework for reform, meaningful reform itself seems unlikely.

## **1.4 Overview of the Thesis**

The thesis is organised in six chapters. This section provides short synopses of the contents of each chapter.

Chapter 2 begins by laying out the theoretical dimensions of the research, and looks at economic and development theories on corruption. I also present an overview of corruption, governance and economic issues in Pakistan. The last part of the chapter introduces the system dynamics studies on corruption.

Chapter 3 focuses on a most important aspect of this research, the methodology used for the study. This chapter describes the research methodology and different phases of this study. In this chapter, we also discuss the difficulties in studying corruption.

Chapter 4 presents the findings from the qualitative data analysis phase. Main themes from the case study are presented in this chapter. The chapter concludes by discussing how the themes contribute to a more nuanced understanding of corruption in Pakistan.

---

Chapter 5 describes the set of data used by the system dynamics methodology for development of the corruption model. This chapter has been organised according to the stages of model-building identified in Chapter 3: feedback process, causal loop diagrams, dynamic model-building, dynamic behaviour and analysis. The last section of this chapter on simulation presents the analysis and a discussion of the simulation results.

Chapter 6 rounds off the thesis as a whole by providing a brief summary of major findings, and the theoretical and practical contributions of this study, as well as recommending opportunities for further research that this study has opened up.

## 1.5 Conference Papers and Proceedings

The following publications in chronological order have resulted from this work and form part of this thesis. These also give testament to the growing understanding of the research topic. All these publications have been subject to international peer review.

1. Ullah, M. A., and Arthanari, T. S. (2011, July). *Using a Qualitative System Dynamics Approach to Investigate Perceptions of Corruption*. Paper presented at the 29<sup>th</sup> International Conference of the System Dynamics Society, Washington DC, USA. Retrieved from <http://www.systemdynamics.org/conferences/2011/proceed/papers/P1223.pdf>
2. Ullah, M. A., Arthanari, T. S., and Urquhart, C. (2010, August). *Corruption and Development: Quantitative, Qualitative and Systems Perspective*. Paper presented at the Harvard Project for Asian and International Relations (HPAIR) Asia Conference, Singapore.
3. Ullah, M. A., Arthanari, T. S., and Urquhart, C. (2010, July). *How can a system dynamics framework aid an understanding of corruption?* Paper presented at the 28<sup>th</sup> International Conference of the System Dynamics Society, Seoul, Korea. Retrieved from <http://www.systemdynamics.org/conferences/2010/index.htm>
4. Ullah, M. A., Urquhart, C., and Arthanari, T. S. (2011, September). *Perceptions of Corruption in Pakistan: A Case Study*. Paper presented at the Australian and New Zealand Society of Criminology Conference (ANZSOC), Geelong, Australia.
5. Ullah, M. A., Urquhart, C., and Arthanari, T. S. (2010, December). *Using thematic analysis approach to investigate perceptions of corruption and its consequences*. Paper presented at The Australian Sociology Association, Sydney, Australia.
6. Ullah, M. A., Urquhart, C., and Arthanari, T. S. (Forthcoming 2012). *Perceptions of Corruption in Pakistan: A Case Study*. *Development Policy Review*, under review.

## 2 Literature Review

*“Corruption is widespread in many developing and transition economies, not because their people are different from people elsewhere, but because conditions are ripe for it. The motivation to earn income through corrupt practices is extremely strong, exacerbated by poverty and by low and declining civil service salaries”.*

The World Bank (2012)

In this chapter, I discuss the various approaches described in the literature, to understand the phenomenon of corruption, by using economic, developmental, organisational, and system dynamics approaches. In the first section of this literature review, the focus is on the system dynamics approach to give understanding about system dynamics modelling. In the second part of the literature review, we will be focusing on earlier theoretical and empirical studies of corruption to give a fair understanding of how the problem is posed and studied, and to develop a background, which will help the application of a system dynamics approach. In the last section, we present an overview of corruption, governance and economic issues in Pakistan.

### 2.1 Theories on System Dynamics

*“System dynamics modelling offers distinctive capabilities to contribute to economics, social science, physical science, or political science modes of analysis. It identifies the complicated interactions among many feedback loops, rejects ideas of linear cause and effect, and requires the analyst to view a complete system of relationships whereby ‘cause’ may possibly be affected by the ‘effect’”.*

Choucri et al. (2006)

System dynamics is an approach to modelling and computer simulation of complex systems in social and physical sciences (Forrester 1958). The field has been extended over the last 45-50 years to modelling new problems such as to model state stability, to analyse supply chain management, to explore dynamics of economic growth, to model software development and to analyse different policies for nation-building, etc. The foundation of the modelling strategy is to design a system structure in terms of stock and flow. According to Pegasus Communications (2011), “system dynamicists study reinforcing processes — feedback flows that generate exponential growth or collapse — and balancing processes — feedback flows that help a system maintain stability”.

System dynamics modelling created by Jay Forrester has been used as a method of analysis, modelling and simulation for the last 50 years. Sterman (1981) suggests that a system dynamics model can be used for a wide range of purposes, for example, it has been used to capture the dynamic relationship of economy and the energy. System dynamics has been used to model the world petroleum market over a period of thirty years (Choucri 1981). Choucri and Bousefield (1978) utilise this approach to explore dynamics of economic growth and to analyse the environmental implications of global trade.

System dynamics modelling allows researchers to discover ‘hidden’ dynamics (Choucri et al. 2006). Moreover, system dynamics enables the analyst an increased level of flexibility as system dynamics modelling uses both a theoretical understanding as well as empirical data collection. Forrester (1991) suggests, “The first step in system dynamics modelling is to tap the wealth of information that people hold in their heads. The mental data base is a rich source of information about the parts of a system, about the information available at different points in a system, and about the policies being followed in decision making”.

Forrester and Senge (1980) suggest that the modelling method of system dynamics formulate elements of causal logic into systems of difference equations and differential equations. To explain the relationships between individual elements in the overall system, an empirical analysis is also used. By understanding state system dynamics, including interactions among events, players, structures, and processes in composite environments, one can better identify how to strengthen state capabilities while diminishing the loads and pressures exerted upon it. The strength of system dynamics modelling lies in being able to recognise, compare and understand both effects (short and long-term) of different elements on other elements, as well as the effects of different relationships on other relationships, while simplifying such complex dynamics (Choucri et al. 2006).

In a recent study, Qureshi (2009) develops a system dynamics-based simulation model to understand the dynamics of human development, government expenditure and economic growth in Pakistan. In this study the author suggests that higher public expenditure on economic growth may neither result in better human development indicators nor better economic indicators. This challenges the very basis of fiscal policy in Pakistan which favours economic growth and constantly

ignores human development and allocates a sizeable budget to economic development and meagre resources to human development. Qureshi (2009) further suggests that human development, demographic and economic indicators of Pakistan have strong linkages with the public expenditure on human development and weak linkages with public expenditure on economic growth (Qureshi 2008).

Yang et al. (2006) adopt a dynamic model of demand-side management based on 'System Dynamics Modelling' (SDM) which was initiated at the Massachusetts Institute of Technology (MIT). The study analyses the relationship between the two-part electricity price and power demand. By using this model, the policies of electricity pricing, such as the ratio of capacity and energy fees in the two-part electricity price, the ratio of peak and valley time price in the time-of-use electricity price were examined and proposed. The electricity price basically consists of two components, i.e., the capacity price and energy price. The adjustment of the price varies with time and season. It includes the ratio of energy and capacity fee in the two-part electricity price, the ratio of peak and valley time price in the time-of-use and seasonal electricity price, and so on.

Bartoszczuk (2004) applies system dynamics modelling to investigate four major trends of global concern: industrialisation, population growth, environment and depletion of non-renewable resources. In this study using economic and environmental modelling, the researcher developed linkages between income, pollution, and non-renewable resources, and supported the view that growth may lead to the exhaustion of natural resources and worsening of the environment.

Components of the organisational concepts referred to as the "systems approach" have been used to manage armies and governments for millennia. However it was not until the Industrial Revolution of the 19th and 20th centuries that formal recognition of the "systems" approach to management, philosophy, and science emerged (Whitehead 1925, Bertalanffy 1968, and Patching 1990). As the level of precision and efficiency demanded of technology, science, and management increased the complexity of industrial processes, it became increasingly necessary to develop a conceptual basis to avoid being overwhelmed by complexity. The systems approach emerged as scientists and philosophers identified common themes in the approach to managing and organising complex systems (Forrester 2007, Ghaffarzagdegan et al. 2011, Maani and Cavana 2007, and Sterman 2000).

## **2.2 Theories on Corruption**

This section reviews important issues related to the theoretical and empirical work in the area of corruption, social and cultural issues, weak institutions, political instability and economic development. Theories from economics and from a development studies perspective on corruption are discussed.

### 2.2.1 Economic Theories on Corruption

Corruption is a complex and multifaceted phenomenon with multiple causes and effects; it takes on various forms and functions in different contexts. The phenomenon of corruption ranges from the single act of a payment contradicted by law to an endemic malfunction of a political and economic system. The problem of corruption has been seen either as a structural problem of politics or economics, or as a cultural and individual moral problem. The definition of corruption consequently ranges from the broad terms of 'misuse of public power' and 'moral decay' to strict legal definitions of corruption as an act of bribery involving a public servant and a transfer of tangible resources (Andvig et al. 2000, Rose-Ackerman 1996).

The economic literature on corruption has generated a rich debate for the last thirty years. On one hand, researchers like Krueger (1974), Myrdal (1989), Shleifer and Vishny (1991, 1993), Tanzi and Davoodi (1997), and Mauro (1995, 1998) have argued that corruption is detrimental to economic development. They point out that corruption modifies the goals of the government and creates a diversion of resources from public purposes to private ones, thereby, resulting in a deadweight on society.<sup>3</sup>

Furthermore, governmental corruption may also discourage private investment by raising the cost of public administration (since it is likely to take the form of a bribe for a public service) or by generating social discontent and political unrest, which in turn, may slow down economic growth (Alesina 1992).

On the other hand, Leff (1964), Huntington (1968), Friedrich (1972) and Nye (1989) have suggested that it is also possible for corruption to be beneficial for economic growth. They argue that if the government has produced a package of pervasive and inefficient regulations then corruption may help circumvent these regulations at a low cost. Under this scenario, it is plausible that corruption may improve the efficiency of the system and actually help economic growth.<sup>4</sup>

Another argument in favour of corruption has viewed bribery as 'speed money', that is, as payments that speed up the bureaucratic process, or payments that are intended to 'mediate' between political parties that would not reach an agreement otherwise. Then, as long as the time consumed by administrative procedures is reduced by the bribe, the bribers could be made better-off. Lui (1985), for example, presents a model in which the costs of 'standing in line' are minimised by the use of bribes. Kaufmann and Wei (1998), however, contest the empirical validity of this hypothesis.

---

<sup>3</sup> In a related argument Krueger (1974) explains how unproductive, rent-seeking activities can be expected to arise in a corrupt environment.

<sup>4</sup> In a famous passage Huntington (p.69) states it simply: "In terms of economic growth, the only thing worse than society with a rigid, over centralised, dishonest bureaucracy is one with a rigid, over centralised, honest bureaucracy".

Andvig (1991) points out that due to imperfect information and strategic considerations queues as allocation mechanisms are more complex and many-sided than has been recognised in the literature. Furthermore, different ways of organising the queue may give rise to different outcomes on the average waiting time. Thus, the results in Lui's model may not be robust to such considerations.

Ehlich and Francis (1999) suggest that the relationship between government, corruption and economic growth is nonlinear. Government interventions in private economic activity hurt most in the poorest countries and those countries at a critical takeoff level. This may explain the prevalence of corruption in countries trapped in poverty, such as Zaire, Somalia and Haiti. Ehlich and Francis explain the unstable growth experience in countries such as Bangladesh, India, and Mexico, where a high degree of past government interventions has contributed to unstable growth experiences. The author finds that government size may have little impact on the rate of economic growth in the more developed countries. The impact of exogenous corruption shocks is expected to be nonlinear, having an adverse effect on the level but not necessarily the rate of growth of per capita income in the more advanced countries.

Empirical literature in the field has consistently reported a negative correlation between economic growth and the level of corruption, and the evidence for beneficial effects on growth has been scarce at best.<sup>5</sup> Using a cross section of countries, Mauro (1995) demonstrates that after controlling for a number of economic and socio-political factors, the relationship between corruption and economic growth is negative.<sup>6</sup> Knack and Keefer (1995) also report a negative correlation between corruption and economic development. Others like Hall and Jones (1999) and Sachs and Warner (1997) have obtained similar results.

Tullock (1990) argues that illicit payments are a substitute for higher wages. Corruption therefore saves money for the government that it would have otherwise paid in higher salaries. Lui (1985) makes the case that what some people call corruption is nothing but a fee for under-priced services. The author suggests that corruption restores price mechanisms and improves the allocation of resources in distorted and heavily regulated markets.

Treisman (2000) finds that rich countries are generally rated as having less corruption than poor countries, with as much as 50 to 73 per cent of the variations in corruption indices being explained by variations in per capita income levels. These findings, supported by other studies (e.g., Ades and Di Tella 1999, Schleifer and Vishny 1993, and Myrdal 1968a), suggest that cross-

---

<sup>5</sup> A good review of all cases can be found in Klitgaard (1988).

<sup>6</sup> We will discuss Mauro's study later in the chapter in more detail.

country differences in the incidence of corruption owe much to cross-country differences in the level of prosperity.<sup>7</sup>

Myrdal (1989) argues that corruption may promote bureaucratic efficiency by speeding up the process of decision-making and the execution of these decisions, but, to be more specific, delays are no more the reason of corruption than they are the consequence of it. Delays offer an indication of the 'shadow price' of an agreement. There will be delays before the agreement is negotiated, but the contracting of the deal will most probably bring these delays to an end. Macrae (1982) argues that it is improbable that legal solutions can be helpful in solving a problem of corruption which has its roots in the day to day function of society from the lowest to highest levels of decision-making. The only way to eliminate bribery from the society is by limiting corruption and distributing gains more evenly.

It is important to observe that analysts who see market reforms as a cause of corruption often fail to understand the amount of corruption that would occur in the absence of well executed economic reforms. A lack of economic reform can help to spread corruption, since official interests become more ingrained as their financial might collects through monopolistic structures. This war chest has become a key weapon to hinder or distort reforms (Kaufmann 1997). Instead, less regulatory and trade interventions, uncomplicated and moderate tax regimes with little discretion, and macroeconomic stability will do much to decrease the opportunities for corruption. Many economists, by analysing data from different countries, find out that openness of an economy to trade and product competition reduces corruption and that liberalising an economy brings even more corruption where judicial institutions are not yet well developed.

Treisman (2000) and Tanzi (2000a) point out that misuse of public office is more likely to be exposed in economically developed countries. Economic development increases the spread of education, literacy and depersonalised ('arm's-length') relationships. The 'arm's-length' principle requires that personal relationships shall play no role in economic decisions involving more than one party. Equality of treatment for all agents is essential for a well-functioning market economy. Rich countries are relatively efficient countries, where transactions have to be fast and transparent.<sup>8</sup> Corruption is a break of the 'arm's length' principle, and may make transactions inefficient, slow and sometimes unpredictable (Schleifer and Vishny 1993, Myrdal 1968a).

Paldam (1999a) and Treisman (2000) find that by far the most important determinant of corruption is economic development, measured by real GDP per capita. Causation runs from higher economic development to lower corruption, and from higher corruption to lower economic

---

<sup>7</sup> Other factors that appear to be significant in determining corruption are the colonial heritage, religious tradition, legal system, federal structure, democratisation and openness to trade.

<sup>8</sup> In the 'classical' corruption literature some scholars argue that corruption can have beneficial effects in developing countries suffering from oppressive state intervention (e.g., Leff, 1964). Thus, by allowing entrepreneurs to side-step restrictive rules, corruption can induce faster growth and higher efficiency.

development (measured by GDP per capita). Incentive theory provides a conceptual framework for analysing the role played by public officials in designing incentives and defining penalties, and in shaping the institutional environment in which corruption takes place (Klitgaard 1988).

Ekpo (1979) suggests that in traditional societies, where the lines between public and private sectors are less clearly drawn and where gift-giving is not clearly distinguished from bribery, the social stigma associated with corruption may be lower. Thus, it is argued, the attempt to apply a modern economy with traditional norms is a recipe for corruption. It is plausible that corruption may improve the efficiency of the system and actually help economic growth.

Lui (1985) presents a theoretical equilibrium queuing model to question Myrdal's hypothesis that corrupt officials cause administrative delays to attract bribes. In Lui's model, it is assumed that both sides in the corrupt transaction are honest: they stick to a deal and no new bribe offers are made by waiting clients after the new entrants have arrived and that there is no moral hazard about the reliability of the sale by the server of a priority in the queue.

Corruption nearly always creates both winners and losers. Alam (1989) discusses how existing theories of corruption have focused attention almost exclusively on winners, and concluded that the level of corruption depends on the size of governments, the internal structure of bureaucracies and value systems. Alam (1995) further argues that corruption is a contest between two parties: those who gain and others who lose from corruption. The outcome depends upon political, legal, cultural, and economic institutions which determine the relative power of the two contestants. The author states that, since corruption is embedded in the matrix of society's institutions, any quick resolution to the problems of corruption may not be possible. The relative power of the two contestants in any country depends, broadly, on the nature of its global factors and its system of rights, which are correlated to its level of economic development, but are also products of its history. Shifts in corruption generally result from shifts in the system of rights which determine the relative power of the two contestants.

Cartier-Bresson (1995) suggests five economic conditions which encourage the flourishing of corruption within a society. The first is the existence of an exploitable natural resource (e.g. oil) providing the opportunity for state authorities, both administrative and political, to obtain payments. Secondly, the general scarcity of public assets relative to demand accompanied by policies of fixed official prices creates opportunities for informal rationing through bribery. Thirdly, low wages in the public sector are also likely to be associated with extensive low-level corrupt payments. Fourthly, high levels of state intervention/planning (i.e. protectionism, state-owned enterprises, price controls, exchange controls, import licenses, etc.), which has characterised many developing countries, creates opportunities of corruption. Finally, economies in transition are likely to have particular problems causing corruption as they undertake privatisation and establish the relevant legal framework of company and contract law, etc.

According to Lambsdorff (1999), empirical research on the causes of corruption focuses on political institutions, government regulations, legal systems, GDP-levels, salaries of public

employees, gender, religion and other cultural dimensions, poverty and the history of colonialism. Lambsdorff states that it is often difficult to assess whether corruption causes other variables or is itself the consequence of certain characteristics. Empirical research based on various corruption indices reports correlation between certain forms of government regulations, poor public institutions, poverty and income inequality.

Ullah and Ahmed (2006) use panel data on the International Country Risk Guide (ICRG) corruption index, institutional quality, political stability indices and a number of control variables for 71 developed and developing countries; this study tried to explore a linear quadratic empirical relationship between corruption and economic growth. The empirical literature that noticed a linear relationship between corruption and economic development failed to differentiate between growth enhancing and growth reducing levels of corruption. The analysis based on the Generalised Method of Moment (GMM) estimation shows that a decrease in corruption raises the growth rate in an inverted U-shaped way. The analysis for the panel data of countries lends significant support to the proposition that the quality of public institutions plays a crucial role in the growth performances of any country. There is strong evidence that the process of economic development reduces corruption — presumably through the rationalisation of public and private roles and the spread of education, which renders abuses harder to conceal. Below is the model, which the researcher (Ullah 2006) adopted for his study:

$$y_{it} = \beta_{i,t-1} + \beta_j X_{it} + \eta_i + \varepsilon_{it} \quad 2.1$$

In Equation 2.1,  $y$  is the logarithm of real Gross Domestic Product (GDP) per worker,  $\beta_i$  is an intercept in the above equation, while  $\beta_j$  represents the coefficients of the variables measuring corruption, institutional quality and conditioning variables,  $X$  represents the set of explanatory variables (other than lagged per capita GDP),  $\eta$  is an unobserved country-specific random effect,  $\varepsilon$  is the error term, and the subscripts  $i$  and  $t$  represent country and time period respectively. The evidence from this study demonstrates the statistical importance of corruption in the development of a robust model that explains real GDP per worker. It also demonstrates the statistical importance of corruption in determining income inequality.

Growth enhancing and growth reducing effects of corruption were attempted in order to capture long run growth as a linear-quadratic function of corruption (Ullah and Ahmed 2006). This is really hard to see if we only take economic variables, because it will give an incomplete picture of how corruption affects the development of any country or society. There are other aspects or systems which need to be incorporated to understand this phenomenon in a broader perspective. How social and cultural values are affected by corruption, for example. Since this is not possible to quantify, a holistic approach is taken to understand this phenomenon.

Most of the empirical evidence seems to be consistent with the theories that hold corruption as purely detrimental. However, all these empirical studies assume that corruption has only a monotonic impact upon economic growth, and, therefore, provides an incomplete test of the

hypothesis and treated this impact as a differentiated phenomenon depending on the size of corruption.

### **2.2.2 Development Studies Theories on Corruption**

In the discipline of development studies, many researchers have tackled the issue of corruption. Johnston (2000) suggests that serious corruption threatens democracy and governance by weakening institutions and mass political will, and by delaying and distorting the development needed to sustain democracy. Diagnostic surveys of corruption in Bosnia-Herzegovina, Ghana, Honduras, Indonesia and Latvia report that government institutions with the highest levels of corruption tend to provide lower quality services. The converse is also true: the survey shows that in Romania state sector entities with better systems of public administration tend to have lower levels of corruption.

The literature (Davoodi et al. 1998, Gupta and Abed 2002, Mauro 1995, 1997, and Ullah 2006) shows that corruption impacts the quality of government services and infrastructure and that through these channels it has an impact on the poor. As government revenues decline through leakage brought on by corruption, public funds for poverty programs and programs to stimulate economic growth also become scarcer. Enhanced education and healthcare services and population longevity are usually associated with higher economic growth. But under conditions of extensive corruption, when public services, such as health and basic education expenditures that especially benefit the poor, are given lower priority in favour of capital intensive programs that offer more opportunities for high-level rent taking, lower income groups lose services on which they depend. This is particularly the case in the health and education sectors.

Much of what is considered corruption in the West is in fact a continuation of traditional gift giving in less developed countries (LDCs) (Scott 1972). The imposition of Western values and attitudes has transformed this traditional gift exchange in LDCs into corruption. Knack and Keefer (1995) find that the quality of government institutions, including the degree of corruption, affects investment and development in a country as much as other political variables (e.g., political freedom, civil liberties, and political violence).

Weingast (1995) argues that a federal state structure contributes to more honest and efficient government by providing for competition between sub-jurisdictions. According to Breton (1996), competition between levels of government will lead to less corruption related to the provision of public services for which officials can demand kickbacks.

Corruption is negatively related with developmental purposes almost everywhere (Kaufmann 1997). It is argued that opportunistic politicians and bureaucrats who try to optimise their take without considering the impact of such perdition on the 'size of the overall pie' may account for the particularly adverse effect corruption has in some countries of South Asia, Africa, Latin America and the former Soviet Union. In most of the surveys conducted by international or national level research organisations, public sector corruption was rated as the most severe developmental

barrier facing their country, and no significant differences were found across regions. Universally, policy making officials opined that corruption, far from being a lubricant of development, was a most formidable obstacle to it.

Davoodi et al. (1998) also find that corruption can lead to reduced social spending on health and education. Countries with higher corruption tend to have lower levels of social spending regardless of the level of development. Corruption lowers tax revenues, increases government operating costs, increases government spending for wages and reduces spending on operations and maintenance, and often biases government toward spending on higher education and tertiary health care (rather than basic education and primary health care).

Tanzi and Davoodi (1997) and Davoodi et al. (1998) argue that corruption increases income inequality, as measured by the Gini coefficient. Kaufman and Wei (1998) found that firms that pay more bribes also spend more time with bureaucrats in more corrupt countries and have a higher cost of capital, thus countering the view of corruption as 'grease money'. In an influential theoretical paper, Shleifer and Vishny (1991, 1993) suggest that states with centralised institutional structure and those with a much decentralised one may suffer less from the damaging effects of corruption than states with an intermediate level of institutional centralisation.

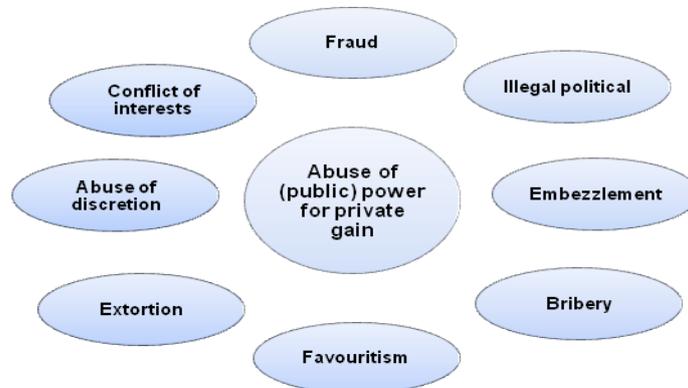
If we look into the phenomenon of corruption at a micro level, it becomes obvious that organisations are a basic unit of corruption in any form. First, most corrupt activities take place between profit driven organisations and government officials (Luo 2004). Second, organisations that are motivated to bribe for transaction-specific gains are partly responsible for the reasons why corruption is difficult to eradicate. Unlike individuals, corrupt organisations cannot be arrested, and hence corruption cannot be eradicated by the promulgation of legally prescribed economic sanctions. Third, an organisation is a platform which provides a clear view about a nation's corruption climate and culture. Corruption may be a passive reaction to cumbersome regulatory environments that impose a hurdle to business development or an active seeking of economic rents from corruption-generating opportunities.

## **2.3 Corruption in Pakistan**

Research on corruption is vital to an understanding of the dynamics of corruption and the development of an efficient anti-corruption strategy. An indirect approach to measuring corruption (via its perception) exists and even though it remains open to criticism it is usually assumed that perception of corruption is an approximate indicator of the real level of corruption (Lambsdorff 1999). Such an indirect approach remains less valid for assessing corruption at any particular point in time rather than for analysing the dynamics of corruption over time. As Moreno (2002) suggests, "Corruption has a cultural side, and most societies have a certain degree of corruption permissiveness, with some of them being, more likely to justify corrupt practices than others". The encyclopaedic and working definition used by the World Bank (1995), Transparency International (1998) and others is that corruption is the abuse of public power for private benefit (or profit).

Incidental corruption is an aspect of life in more or less all societies, but it can be systematic in many public institutions in developing countries, if not systemic in society as a whole, and it can be both prevalent and planned (Riley 1983).

According to United Nations Office of Drug Control and Crime Prevention (UNODCCP 2002), consideration of the context or circumstances in which different forms of corruption tend to occur is critical to the development of effective anti-corruption strategies. In fact, a key lesson learned in recent years has been that simply criminalising corruption and punishing offenders does not work without some broader understanding of the economic, social, political and cultural factors which contribute to corruption, and putting in place additional measures based on that understanding. Figure 2.1 depicts the various forms of corruption in a society in broad terms. Stulhofer et al. (2008) stated that research on corruption is an important element of an efficient anti-corruption strategy.



**Figure 2.1: Forms of Corruption (UNODCCP 2002)**

Corruption takes place in societies where there is significant discretion for public officials, limited accountability and little transparency in governmental operations; in such societies and cultures, civil society institutions, and an independent private sector are often weak or undeveloped (Ullah et al. 2010, Khan 2006). The establishment of corruption on a systemic basis may be an outcome of the continuation of existing inequalities in weak ('soft' or 'hollow') states where it can thrive "on disorganisation, the absence of stable relationships among groups and of recognised patterns of authority" (Huntington 1968, Andreski 1970).

Chene (2008) points out that corruption remains a major obstacle for Pakistan where it is perceived to be prevalent and systemic. Petty corruption in the form of bribery is widespread in law enforcement, procurement and the provision of public services. Furthermore, the judiciary in Pakistan is not seen as independent and considered to be shielding corrupt political practices from prosecution (Transparency International 2007). Political instability and insecurity have dominated Pakistan over the last few decades, marked by frequent regime changes and political unrest. Between 1988 and 1999, four different democratically-elected governments held power under the same two political leaders. Each government was either dismissed or toppled, often as a result of corruption accusations and allegations of power misuse (Berg et al. 2008).

Khan (2001) argues that the negative welfare effect of bureaucratic and political corruption is widely recognised in Pakistan. It is further stated that there are some differences in the importance given, to different types of bureaucratic and political corruption — as causes of welfare reduction. In Pakistan, generally, political corruption refers to the corruption which political representatives engage in. Political corruption often interlinks with bureaucratic corruption in the form of collusion between bureaucrats and politicians (Berg et al. 2008). Whether bureaucrats take the initiative in involving politicians to save themselves from state sanctions, or whether politicians direct bureaucrats to engage in corrupt practices which benefits the clients of politicians, this interlocking is prevalent in the developing world. “In countries with deeply entrenched corruption, where many top bureaucrats are political appointees, not career civil servants, corruption is sometimes hierarchically organised, so that political and bureaucratic corruption are interlocked (Bardhan 2006). According to Khan (2001), “Bureaucrats are likely to be corrupt if they have the opportunity to be corrupt and if the expected cost of corruption for the bureaucrat is smaller than the expected gain”.

“Decades of dictatorship have weakened Pakistan and have brought the country to a position where it is considered to be the most perilous country of the world, which is indeed a very saddening fact for the Pakistani people” (Mahrwald 2009) . In 2007, the United States government supported a deal that allowed General (Retired) Pervez Musharraf (Ex-President) to remain in power and allowed Benazir Bhutto, chairperson of the Pakistan People’s Party, to return to Pakistan after long years in exile. This deal called “National Reconciliation Ordinance” (NRO) was in fact an amnesty law designed for Benazir Bhutto, who faced corruption charges. It is considered as a major setback for democracy, rule of law and justice in the country (Nadvi and Robinson 2004).

According to Transparency International’s 2011 CPI, New Zealand, Denmark and Finland top the list with the score of 9.5 for first place and with scores of 9.4 for the second place (as least corrupt). Unstable governments, often with a legacy of conflict, continue to dominate the bottom rungs of the CPI. Afghanistan and Myanmar share second to last place with a score of 1.5, with Somalia and North Korea coming in last with a score of 1.0 (Transparency International 2011).

### **2.3.1 The National Anti-Corruption Strategy in Pakistan**

The National Anti-Corruption Strategy (NACS) project was initiated by the National Accountability Bureau (NAB) in 2002 with the purpose in mind to drive Pakistan further on the long road to accountability and transparency. According to NACS (2002), corruption is widespread and deeply entrenched in Pakistani society. In terms of grand or mega corruption, the scale of corruption is at a peak in politics, development projects, procurement (including defence and the public sector corporations) and the bank loans write-off.

According to NACS (2002), there are two anti-corruption agencies at the federal level and four at the provincial level, and three sets of courts in Pakistan. These anti-corruption agencies are

Federal Investigation Agency (FIA), National Accountability Bureau (NAB), both at the federal level and Anti-Corruption Establishments at the provincial level. FIA is active in the areas of economic, immigration crime, and corruption by civil servants in the federal government and corporations.

It is important to note that the performance of Anti-Corruption Establishments (ACEs) at the provincial level has been very poor. The reasons for the anti-corruption establishments' poor performance are similar to those of their federal level counterpart, the FIA. "Since, anti-corruption establishments have been the victims of bureaucratic and political control, poor capacity to investigate white collar crime and corruption has rendered them ineffective. Overall, there has been a marked lack of Political Will to make ACEs effective, and this has been reflected in their under-resourcing. Poor salaries have exposed officials to temptations of corruption, and, like FIA, their reputation has been tainted by this" (NACS 2002). NAB is the leading anti-corruption agency of Pakistan by virtue of its more recent creation, its extensive powers and comparatively strong performance. The performance of NAB, as compared to all past efforts, has been good. It has effectively prosecuted individuals at all levels, although its main concern has been grand corruption. Domestically, it enjoys a much higher level of public confidence than other agencies (Chene 2008). But unfortunately after a few years its effectiveness has deteriorated.

Furthermore, Khan (2001) points out that the judicial and legal system can serve no such anti-corruption purpose, because it is riddled with corrupt practices in Pakistan. The people's perception is of corruption at all levels of the judiciary, with confidence in the subordinate judiciary particularly low. The incidence of corruption is acute in the lower judiciary, where money has to be paid at virtually every step of the judicial process in order to make it move forward, or halt the process altogether. Till 2002, Pakistan's anti-corruption crusade had been enforcement-based. By this time the awareness of the problem had grown strong enough that given the widespread nature of corruption and the failure of past efforts to control the menace, there was a need to rethink and come up with a comprehensive and holistic approach to combat the menace.

## **2.4 Governance Issues in Pakistan**

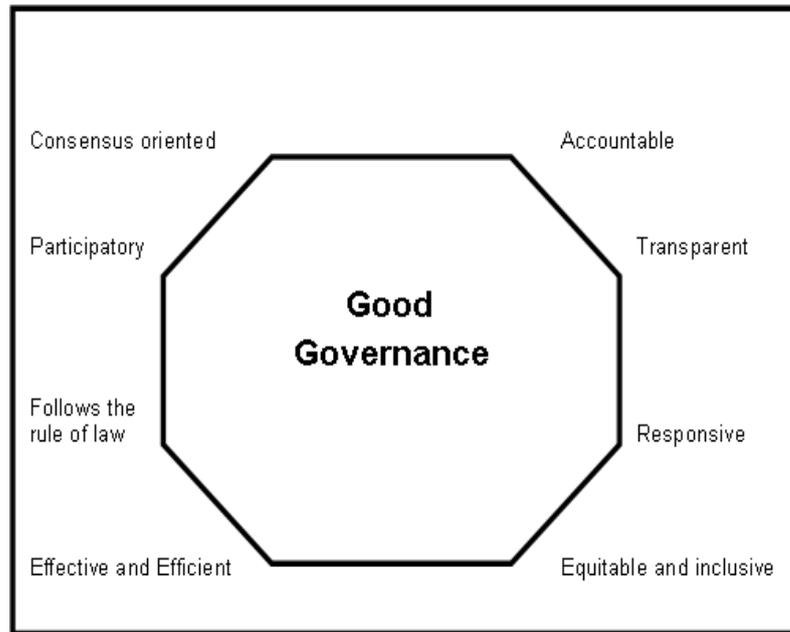
According to the United Nations Development Program (UNDP), "governance is the exercise of political, economic and administrative authority to manage a nation's affairs. It is the complex mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights and obligations, and mediate their differences" (UNDP 1997). The World Bank (1995) defines governance as the method through which power is exercised in the management of a country's political, economic and social resources for development.

According to Tanzi (1998), if any government wants to root out corruption then their leadership must show zero tolerance and sincere and visible commitment. However, the level of corruption can be reduced by increasing public sector salaries, increasing incentives toward honest behaviour, and instituting effective checks and balances on the public officials (Eigen and Hossain 2002).

Good government is seen as a primary condition toward the wider goal of good governance. Described as the “use of political authority and the exercise of control over society and the management of its resources for social and economic development”, good governance comprises the “nature of functioning of a state's institutional and structural arrangements, decision-making processes, information flows, policy formulation, implementation capacity, effectiveness of leadership, and the nature of the relationship between rulers and the ruled” (Landell-Mills and Serageldin 1991).

Government agencies, civil society organisations and donor agencies are increasingly recognising the “strategic importance that good governance plays in the development process”, and that good government requires the “highest standards of integrity, transparency and openness”, as well as strong criminal justice systems. Weak and ineffective criminal justice system and poor governance cannot combat 'new forms and dimensions' of corruption, and reduce corruption its pervasive effect on government performance, on the use of public resources, on the general morale in the public services and on the legitimacy of the state and the law (Doig 1995). Consequently, the evidence of commitment to good government and thus good governance that may have been assumed to be implicit has now become explicit both with a comprehensive plan for reform and the threat to cut back funding to those countries which fail to act effectively to reduce corruption (World Bank 1997). “Both good governance and bad governance appear to have evolved in response to events of geopolitical importance. While the term good governance has been current since the end of the cold war, bad governance has been circulating since September 11, 2001 at the latest” (Zaidi 2005).

According to the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), good governance includes “participatory, consensus-oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive governance system that follows the rule of law. It assures that corruption is reduced, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society. The essential elements of good governance are the rule of law, accountability, transparency and predictability. The rule of law means equal application of law, equal protection by law and equality before the law. In the absence of the rule of law, institutions get weak and become hatcheries for corrupt practices and the realisation of the goals of good governance and prosperity becomes a myth” (UNESCAP 2007). Figure 2.2 illustrates the eight major characteristics of good governance.



**Figure 2.2: Characteristics of Good Governance (Adapted from UNESCAP, 2007)**

Haque (2001) suggests that the recent transition in the “ideological foundation, theoretical basis, and practical orientation of governance is a worldwide phenomenon affecting almost all nations, including those in South Asia like Pakistan, India and Bangladesh”. The author further states that this current transformation, which is mainly identified with neoliberal ideology and neoclassical theory, has taken place with a view to reinvent, reengineer, or revive overall governance in different countries. Khan (2006) argues that a large number of mechanisms have contributed to the entrenchment of corruption and the associated problems of governance in South Asian countries including Pakistan. Foremost amongst these has been the deeply entrenched phenomenon of political corruption, increasing over time, closely connected to the growing fragmentation of politics in South Asia.

Hashmani (2010) states that another reason for widespread corruption in Pakistan is that the principles of good governance are not followed at the government level. Corruption is most rampant in the country due to the institutional inefficiencies, such as political instability, bureaucratic red tape, and weak legislative and judicial systems. Most of the practices of administrations are connected with corruption, collusion and favouritism, which also lack transparency. Excessive discretionary powers vested in the public officials are another major cause of corruption. The public officials are unaccountable to people, and are often their masters, rather than their servants (Hussain and Hussain 1993)

While it is a commonly accepted fact, that among many other causes, corruption originates primarily from poor governance, it is essential that if any government wants to eradicate corruption then governance has to be good in its manifestation. According to Zaidi (2005), the key components of good governance are supremacy of rule of law, accountability, transparency and

predictability. In the absence of these components the edifice of state institutions can collapse and so does public confidence, giving rise to overall depression and hopelessness.

“Corruption and poor governance limit economic growth and retard the development of a healthy private sector” (UNDP 1997). Javaid (2010) suggests that poor governance leads to, and promotes and breeds, corruption in a number of ways, for instance through bribery and extortion, nepotism and fraud and embezzlement. It also reduces the efficiency on which an economy depends, and, by increasing the cost of investment, lowers the potential return. The author further stated that it also reduces the government’s resources and hence its capacity for investment (Hindriks 1999). Khan (2006) states that the extent of corruption in Pakistan has led to wider concern regarding poor governance, which in turn is responsible for poor economic performance, persistent poverty, the subversion of democracy and the rule of law, and the inability to attract sufficient foreign investment in the country (Gupta and Abed 2002).

## **2.5 Economic Problems in Pakistan**

There can be no argument that corruption is enormously damaging to the development effort, and for a number of reasons. The monetary cost of misused funds is huge — bribery alone is estimated at US\$1 trillion annually in the world. Moreover, there is leakage of funds through misuse and illegitimate procurement. On top of this direct monetary loss, dishonesty among public servants damages the credibility of governance institutions and expectations of dishonesty weaken trust in the private sector as well (World Bank 2004, Treisman 2000).

It is a generally accepted fact that the overall impact of corruption on development is to damage the prospects for economic growth and thus the prospects of the poor. Existing literature has broadened the concept of poverty from a narrow income-based definition to a more inclusive notion of 'capability' poverty, which addresses issues of literacy, health, and social exclusion. It is essential to note that whatever definition is used for poverty, petty and grand corruption has direct and indirect effects on poverty (Bardhan 1997, Kaufman and Wei 1998, Lambsdorff 1998). Corruption is a common problem in many developing and developed countries of the world. Most of the third world countries are grossly affected by this menace. There are many causes of this problem including social, economical and political reasons, which cause the genesis of corruption in a society. Most of the researchers are agreed on the notion that the basic root causes of corruption are the societal (UNDP 2008).

Javaid (2010) suggests that corruption perpetuates and aggravates poverty in a variety of ways which includes, a) diverting financial resources and benefits towards the rich and away from the poor, b) diverting public spending and investment towards large capital-intensive projects to maximise bribe receipts, reducing the resources available to governments to fight poverty through social programs, c) imposing an additional tax, which the poor are least able to pay, d) reducing tax

revenues and thus a reduction in public welfare projects and services that benefit the poor, e) undermining social, economic and political stability with consequences that leave poor people more insecure, f) reducing economic growth of the country and thereby reducing the opportunities for the poor to escape from poverty, g) perpetuating social exclusion and preventing the poor from acquiring the capability to challenge inequalities of power and resources, and h) depriving the poor of their legal rights and entitlements (Davoodi et al. 2001).

Haque (2000) argues that corruption is detrimental to economic growth of the country because it lowers incentives to invest. It is also diminishing the economic growth by lowering the quality of public infrastructure and services, decreasing tax collection, attracting talented people tending to be involved in non-productive activities, and distorting government expenditures. In the last 60 years, Pakistan's budget has been allocated mostly to debt servicing and the defence spending (Davoodi et al. 2001, Tanzi 1998). "A large percentage also is lost to corruption, this leaves very little money to allocate toward economic development. Due to Pakistan's consistent failure at reforming corruption in the past, foreign donors feel reluctant to give aid to Pakistan (Diamond 1994, Ullah and Ahmed 2006, Alam 1995).

Paris (2010) suggests that persistent leadership and public management deficit, along with a loss of credibility in the international markets, is due to political instability, Pakistan requires an extraordinarily long period of sustained growth to make a dent in its socioeconomic problems like poverty, unemployment and underdevelopment. In an environment, where there is a lack of integrity, investment is discouraged and the objective of accelerating economic development, increasing prosperity and generating a poverty reduction strategy receives a severe setback. Corruption in government spending leads to a serious reduction in the impact of development programs and results in a perpetual increase in cost of maintenance of public assets (Ullah et al. 2010). Afzal (2010) states that capital flight, lack of investor confidence in the economy, deteriorating infrastructure, pervasive corruption and other factors that increase the difficulty of doing business in Pakistan are only made worse by the security situation that developed as a result of Pakistan's role as a front-line state in the War on Terror in 2001.

According to the Asian Development Bank's report (Rimmer 2000), the decade of the 1990s was a period of economic crisis for Pakistan with its macroeconomic position remaining in a state of systematic volatility. This was in part an outcome of political instability and governance problems, as well as the imposition of a series of structural adjustment reforms, agreements that sought to curtail the fiscal deficit and reign in government spending. Economic growth rates fell from an average of over 6% a year in the 1980s to an average of 4.5% in the 1990s. Inflation reached double digits in the early 1990s, and despite the agreements with the International Monetary Fund (IMF), the fiscal deficit remained high. The direct impact of increased corruption can be observed in the rise in the prices of food commodities, which according to the latest official data of Federal Bureau of Statistics (Pakistan) have increased up to 120 per cent during 2009-2010 (Transparency International Pakistan 2010). Moreover, servicing of the growing foreign and

domestic debt resulted in a series of foreign exchange crises and further worsened the deficit. Thus, most of the IMF structural adjustment agreements that Pakistan entered into during the 1990s, each of which came with tough conditions when development assistance, failed to run its full course (Manor 1999, UNDP 2002).

According to Transparency International Pakistan (2010), foreign debt of Pakistan increased from US\$ 40 Billion in 1999 to US\$ 46 billion in 2008, whereas in last two years it has increased to US\$ 53.5 billion. Despite the huge influx of foreign funds, the desired results have not been attained; instead they have provided rich pickings and fuelled corruption (Manor 1999, Rimmer 2000). Despite some success, large segments of the population remain deprived of basic necessities like health care, education, infrastructure, and even electricity. A major cause of these failures has been the corruption that has raised its ugly head in every conceivable form in development projects (Javaid 2010, Chene 2008).

Rose-Ackerman (1999) and others stress that privatisation of state-owned enterprises can improve the performance of the economy and, in the process, reduce corruption. However, the process of turning over state assets to private owners is fraught with opportunities for corruption and self-dealing. The sale of a large parastatal or public sector organisation is similar to the process of tendering for a large public infrastructure project. Thus the incentives for malfeasance are similar. Corruption may undermine the efficiency rationale that lies behind economic justifications for privatisation (Dudley 2000). Table 2.1 provides a brief overview of some cases of mega corruption in Pakistan.

<b>Mega Corruption Cases and Scandals in Pakistan</b>
<p><b>Pakistan Steel Mill:</b> One of the most famous cases relating to privatisation involves the attempted privatisation of Pakistan Steel Mills. As Pakistan's largest and only integrated steel manufacturing plant, 100 per cent of its equity is owned by the government. In 2005 the decision to privatise the mill was taken by the government. The corporation, assessed at Rs.72 billion (US\$ 1.2 billion), was sold to a consortium for Rs 21.58 billion (US\$ 362 million) on 24 April 2006. On 23 June 2006 the Supreme Court of Pakistan ruled against the privatisation.</p>
<p><b>National Reconciliation Ordinance:</b> The National Reconciliation Ordinance (NRO) was issued by the President Musharraf government in 2007 to grant immunity to corrupt elements and bar legal action against ministers and parliamentarians. In many ways this was a setback for anti-corruption measures in Pakistan, as all proceedings under investigation or pending in any court that had been initiated by or involved the National Accountability Bureau prior to 12 October 1999 were withdrawn and terminated with immediate effect.</p>
<p><b>Liquid Natural Gas:</b> In 2010, the US\$1 billion Liquid Natural Gas (LNG) scam was detected in the award of 3.5 million ton LNG contract after the top guns of the Ministry of Petroleum, Pakistan ignored the lowest bid of the Fauji Foundation, Pakistan and the multinational energy firm, Vitol, and awarded it to the highest bidder, a French firm. The Supreme Court of Pakistan took suo moto notice and scrapped a government deal to import billions of dollars of liquefied natural gas from France's GDF Suez, after looking into suspected irregularities.</p>

**Table 2.1: Corruption Cases in Pakistan (Global Corruption Report 2009)**

According to Mahmood (2007), private sector in Pakistan is broadly divided into the formal and the informal sector, and the size of the informal sector is relatively big, and there is no comprehensive regime addressing the issue of informal sector bringing under the tax net in the

past. Moreover, many of the government's policies provide opportunities for money laundering. In particular, because corruption has weakened the national economy, many of the most corrupt arrange for the fruits of their corrupt practices to be sent or made available abroad. The private sector in Pakistan is largely, officially, undocumented. Although there may be few businesses that can survive without keeping proper accounts, very little is officially disclosed to the authorities by the businesses on the pretext that no books of accounts are maintained. This widely accepted practice leaves much room for tax evasion and other malpractices. This also distorts the facts and figures required for accurate formulation of economic policies and resource allocation.

According to assessment from the Asian Development Bank, Pakistan's economic development has been marked by brief periods of significant economic growth followed by sustained periods of economic stagnation and macroeconomic crisis. Such periods of crisis have been associated with high inflation, low growth, rising budget deficits and rapidly declining foreign exchange reserves (Abed and Sanjeev 2002). Consequently, for much of Pakistan's history, its macroeconomic managers have been engaged in crisis management. Much of the failure in achieving a sustained economic growth path lies in poorly defined economic strategies. This factor, in tandem with corruption, lack of accountability, and weak judicial mechanisms has enhanced the economic governance crisis in Pakistan since the late 1960s, undermining economic decision making and foreign and domestic investment.

Besides the above discussed major crisis of Pakistan that contributes to macroeconomic instability, the government's poor and corrupt policy-making further dampens the economy and put the public fortune in ditch of risks, challenges and uncertainties. It is suggested by the National Anti-Corruption Strategy that if Pakistan is to achieve sustained socio-economic development with healthy foreign investment, corruption must be eliminated at all costs. A strong political will, rule of law, backed by an honest and incorruptible judiciary, will surely help achieve the dream of a strong, progressive and prosperous Pakistan.

## **2.6 Systems Studies on Corruption**

In this section, we discuss systems simulation approaches that explore the problematic issues such as political instability, corruption, terrorism etc.

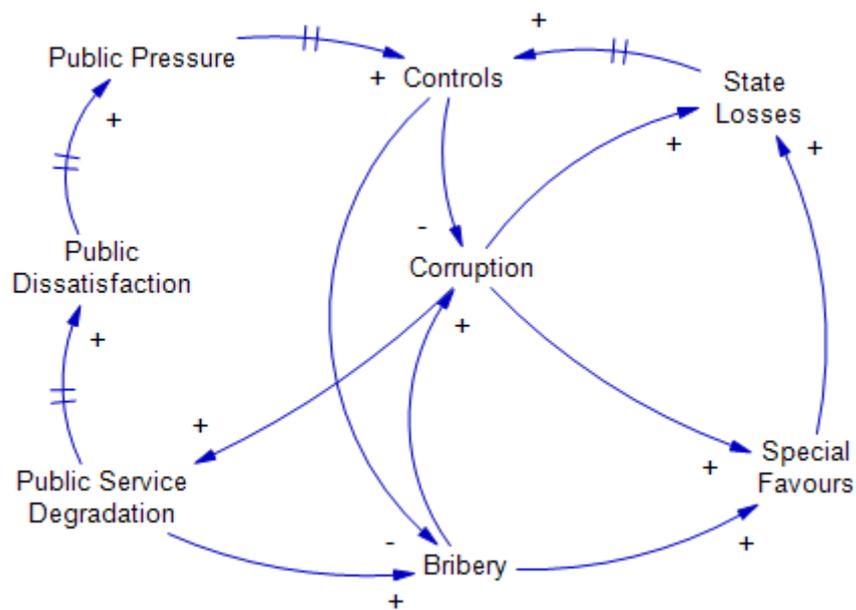
Situngkir and Khanafiah (2004) argue that corruption is an important issue as it becomes difficult to achieve the better and more competent economic system. Situngkir and Khanafiah's study define corruption in two ways, as state capture and administrative corruption. This captures the essence of the corruption cases modelled in Situngkir's "dynamical computational social system". The computational simulation experiments performed in this study showed that the dynamics of corruption touch the trusted agents and the agents offering abuse of the trust (these are the two interacting agents in the computational model). The approach to deal with corruption should also handle these two agents at the same time.

Situngkir (2003) builds an agent-based model of corruption to capture the dynamics of corruption in the social system, since the corruption phenomena itself can be seen as the macro-structure that occurs by simple interaction among individuals with particular properties at the micro level. In that model, the process of corruption involves two interacting agents, i.e. the trusted agents and the agents who try to attract the trusted agent to abuse the trust. In the computational simulation experiment, Situngkir (2003) showed and tested some hypotheses driven by common sense such as a) corrupt government will induce corrupt citizens, and b) corruption could be solved completely if all people in the system turned out to be honest. Silverman et al. (2009) takes into account socio-cognitive modelling by recognising the importance of behavioural modelling. The focus of this research is to try and combine the best theories and paradigms across all the social science disciplines, to provide a holistic modelling framework. The institutions modelled are public works, health, education, legal protections and elections.

Sergeyev and Moscardini (2006) apply cybernetic principles to examine the attempts at governance in the Ukraine during the transition period. In this paper they used the Viable System Model (VSM) methodology to understand the problem of economic transition from a strong centralised command to market conditions, identified serious structural flaws in the organisation of governance at the national level and explained how this made the development of distorted strategies at the level of economic agents. This helped them to present plausible reason for phenomena such as corruption, barter, arrears, growth of overdue debts and the existence of incentives, which drive the behaviour of firms. They provide different explanations of this phenomenon, which are entirely based on an analysis of the complex management tasks performed at each level of recursion — from a government to a firm — instead of using traditional economic analysis. It has been further shown that structural specificity of a system shapes the behavioural patterns of each systemic element, whether it be a government body or a firm's management. The notion of structural determinism is explored in this article to describe that structure that defines the dynamics of any structural change.

Corruption is shown to be an effective substitute for an underdeveloped institutional infrastructure which not only supplements many behavioural norms but dislodges them from the agenda of economic processes. The transition process is an historical process which takes place over a large period of time. At many points in this process, there are crises which could be described as bifurcation points and actions are taken that destroy the ideas of causality. Thus it is impossible to predict the future but it is possible to understand the structural adaptations that are taking place and thus understand the potential for several possible economic outcomes. Using the systems idea of “desire to preserve its identity”, the Ukrainian economy was examined. Disorganisation, Bad Governance and the Virtual Economy were three stages identified (Sergeyev and Moscardini 2006). The authors identify “a serious structural flaw in the organisation of governance at the national level and it is shown how these inadequacies induced the formation of mutant abnormal strategies at the level of economic agents”.

In Figure 2.3, a simple model of corruption is developed by using a systems thinking approach (Gene 2006). There are many feedback loops: corruption increases public service degradation, which in turn increases bribery, and both increase special favours, which increases state losses (e.g. state tax income). The public service degradation increases public dissatisfaction, and indirectly yields to public pressure for change and for controls in terms of law, law enforcement, transparency, as well as social control. In the diagram, we see that only the variable control has a negative effect on corruption and bribery. These causal links also have delayed effects in them — the equal sign across the arrow in the diagram — which shows or depicts that they happen much slower than the more immediate effects of corruption and bribery. State losses also pressure the government to take action. Apart from social control, control is mostly a government business, and slow reaction of the bureaucracy is quite well known (Gene 2006).



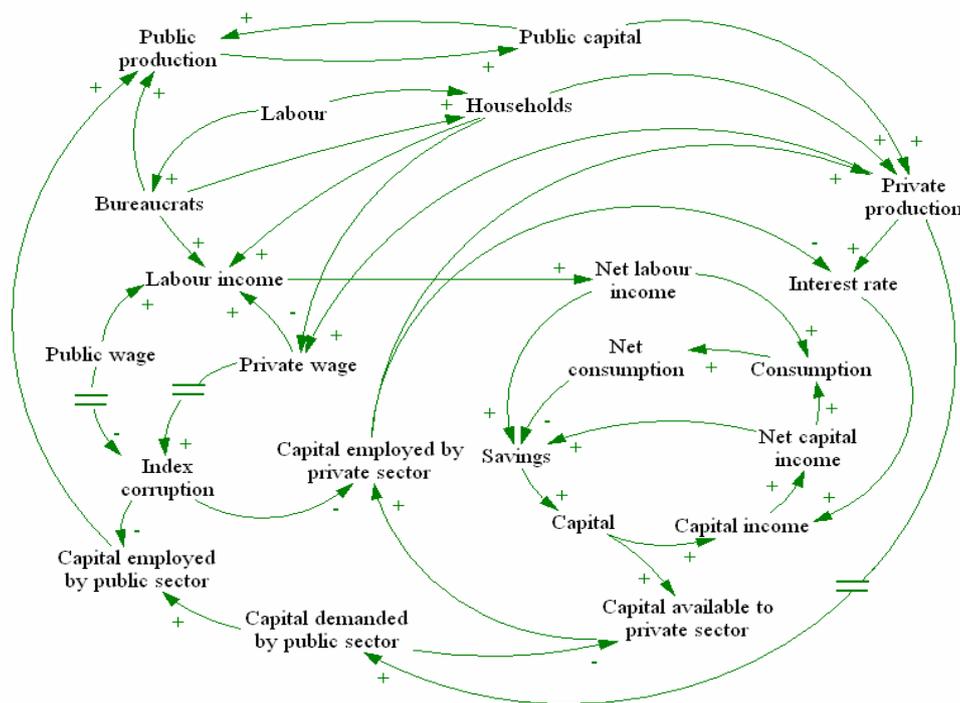
**Figure 2.3: A Simple Model of Corruption<sup>9</sup> (Gene 2006)**

According to Saeed (2005), neoclassical economics seems to have rejected the concept of limits to growth by assuming that the market and the technological advances invoked by it will make it possible to tap new resources and create substitution of production factors, while it has outright excluded limitations invoked by the political, psychological and social institutions in its analysis. Moreover, classical economics appears to have been cognizant of a multitude of limitations to growth, including demographic, environmental, and social. The author reconstructs classical economic growth models using a system dynamics method and demonstrates their

<sup>9</sup> Positive sign (+), negative sign (-), and parallel lines (=) on the links are showing increasing, decreasing and delayed effects respectively between these constructs. This is the simple model of corruption, which can be helpful to develop some complex model in future research.

behaviour using computer simulation. Saeed (1990) uses system dynamics modeling and computer simulation to demonstrate the systemic perspective and the richness of these models. This study provides a vehicle for understanding classical thought on economic growth and reiterating the importance of the variety of behavioural and demographic factors and the non-quantifiable soft variables it subsumed. According to Saeed and Prankprakma (1997), in the complex world of today, it would be impossible to ignore these variables without losing sight of the important dynamics that we experience in reality.

Soto-Torres et al. (2007) develop a system dynamics model to study the effect of bribery on economic growth. In this model, the difference between the public and private wage allows the introduction of public corrupt activities in the economy. It also reflects normal economic activities and interactions between the public and private sector, and the new causal relationships arising from the corrupt activities. The feedback processes thoroughly explain why corruption changes both public and private production as well as the wealth of some citizens. Figure 2.4 shows that the capital available to both the public and private sector differs from the capital used by the sectors in their productive processes as a result of corruption, which is quantified by means of the corruption index. In the figure, it is also possible to observe different feedback loops, which condition the dynamics of the model.



**Figure 2.4: The Influence of Corruption on Economic Growth (Soto-Torres et al. 2007)**

According to Ghaffarzadegan et al. (2011) a systems approach provides learning environments where modellers, policymakers, and others can design and test policies. Given the complexity of many policy environments, experimentation is essential for the design of effective policies. A systems approach also provides a helpful environment where policymakers can

experiment and learn about the effects of different policies without any significant social and economic cost for policymakers. Richmond and Peterson (1997) state that simulation modelling can help to build consensus surrounding difficult policy problems. By communicating the counter-intuitive nature of policy problems to policymakers, simulations can encourage dialogue and lead to the development of shared interpretations regarding the source of problem behaviour. Even when different goals and value systems persist, simulation modelling can help to focus the discussion on specific variables and outcomes that are the source of divergence.

---

### 3 Methodology

*“.....Not everyone is suited to doing case study research. Although people skills can be taught, it might be easier and less time consuming for some budding researchers to choose another research method altogether, one that does not rely so heavily on people interaction. Case study research is not a soft option, particularly for those who are socially challenged.”*

Qualitative Research in Business and Management, Michael J. Myers (2009:79)

This chapter outlines the two phase methodology (case study and system dynamics model) adopted for this study in order to answer the research questions: a) How can our understanding of corruption be extended by using a system dynamics approach?; b) What would a system dynamics model of corruption in Pakistan look like?; c) What are the contributions of such a model?; and d) What are the perceptions of people in Pakistan about their everyday experiences of corruption? The purpose of this chapter is to: (a) discuss the research philosophy, (b) explain the methodology chosen and why it was adopted for the research question, and (c) explains how the data was analysed in Phase I and II. This chapter further deals with the research methodology of the study, data collection instruments, and data analysis methods used in this study. A justification for why these are chosen is outlined. Figure 3.1 illustrates the phases of this study.

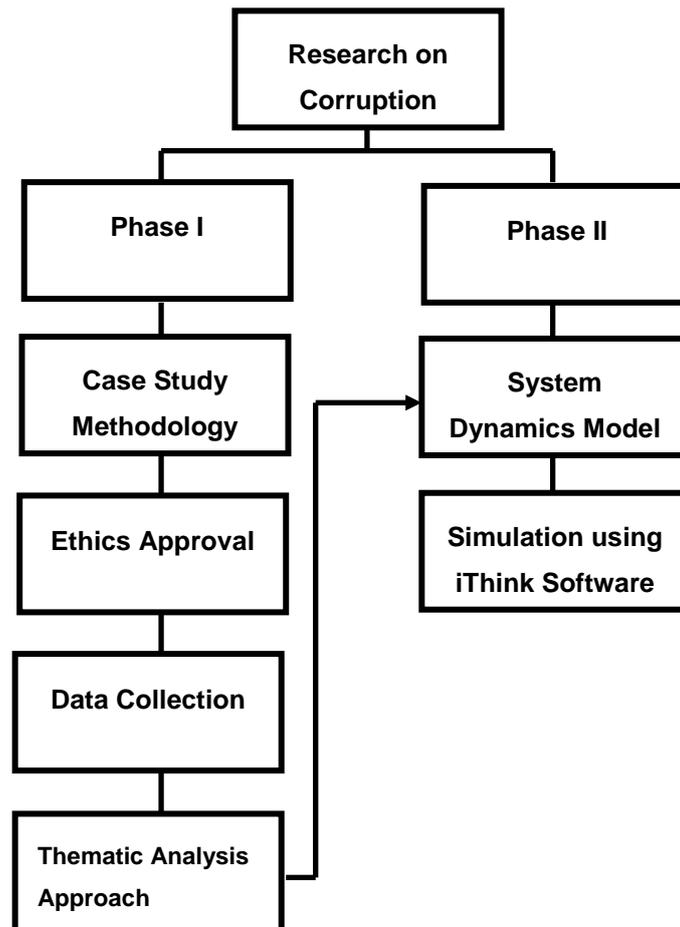
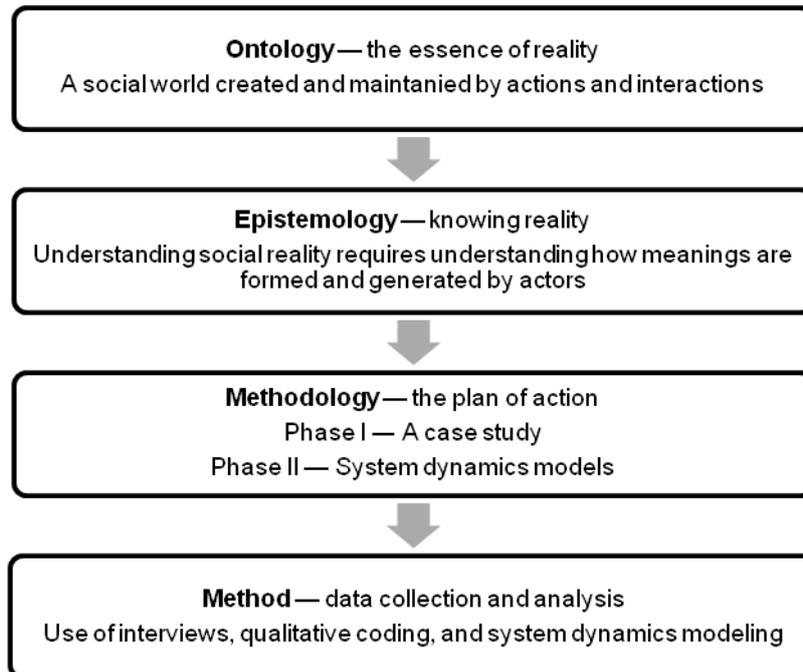


Figure 3.1: Phases of Research

### 3.1 Research Process

According to Livesey (2003), a research philosophy is defined by four elements in which data about a phenomenon should be gathered, analysed and used. These elements are: (a) Ontology — or what do we believe exists? This requires the fundamental beliefs that someone holds about the nature of the social world and its relationship to individual social actors, (b) Epistemology — or what proof will we accept about what constitutes reliable and valid knowledge? This level of proof relates to what we believe exists and how it is possible to study it reliably and validly, (c) Methodology — or how we can go about the task of producing reliable and valid knowledge? This idea speaks about how we go about the construction of theoretical knowledge about the social world. (d) Methods — or how we actually physically collect data to test the theories. This involves the basic fundamentals of data collection (questionnaires, interviews, participant observation and so forth). The ontological and epistemological choices will be associated with as the philosophic stance regarding the nature of reality and will determine how the researcher will get knowledge about the world that they are studying. These decisions must be similar (Crotty 1998). Collis and Hussey (2009) explain that the assumptions made in each of the remaining parts are

interconnected and tend to be complementary to ensure similarity in the approach applied. Figure 3.2 indicates the research process followed in this research.



**Figure 3.2: The Research Process (Adapted from Livesey 2003)**

Collis and Hussey (2009) further explain that qualitative researchers try to understand the context or setting of the participants by examining this context and collecting information personally. The following sub-section explains the methodology applied in the present research. We will discuss the ontological elements, followed by discussion of the interpretivist approach to research since this is determined by the ontological elements.

### 3.1.1 Ontological and Epistemological Elements

Collis and Hussey (2009) illustrate that the ontological and epistemological principles inform the selection of methodology for the research; this is necessary to explain the philosophical position regarding the research problem. Researchers must first answer the ontological question: “What is the structure and nature of reality and, therefore, what is there that can be known about it?” (Guba and Lincoln 1994). In answering this question we observe that the meanings and norms matter a lot, as we can see by observing that many behaviourally identical actions may be interpreted very differently depending on circumstances (Granovetter 2005). The forms of “gifts”, “favours” and “loans” are morally neutral. But the exact same exchanges, if construed as “bribes” or “payoffs”, have very different meanings. We need to explore what social principles govern our interpretations of what category given exchanges fall into. Neuman (1994) asserts that “social reality is based on people’s definition of it”. From an ontological perspective, this research falls in interpretivist paradigm (Collis and Hussey 2009).

According to Guba and Lincoln (1994), to understand the epistemological issues, the research should answer the question: “What is the nature of the relationship between the knower or would be knower and what can be known?” Cope (2002) describe that the epistemology is concerned with what can be regarded as acceptable knowledge. These issues must be addressed in a fashion similar and consistent with the previously declared ontological perspective. This further helps answer the question “how do I know what is true?” (Cope, 2002) as well as devising an approach to looking at how individuals understand the world around them. “Epistemology is a theory of knowledge with specific reference to the limits and validity of knowledge” (Collis and Hussey 2009). Some different epistemologies are: positivism, realism and interpretivism. Whilst it is outside the scope of this thesis to provide an extensive critique of each position, the central tenet of interpretivist approach is outlined below.

### **3.1.2 The Interpretivist Approach**

Given that this planned study deals with a social phenomenon, this research utilises an interpretivist approach. We need to explore what social principles govern our interpretations of what category given corrupt practices fall into (Granovetter 2005). Interpretivism requires a different approach for the study of the social world to that of the natural world. Interpretivists seek to understand human behaviour and the social world (Bryman 2001). An appreciation of subjectivity and bias is therefore important to Interpretivists. Furthermore, individuals within society are regarded as important actors who can change social structures. Therefore, studying the structures alone, removed from human interpretations or meanings is not appropriate. Instead, the interpretations of individuals, what meanings they ascribe to social structures etc, are central to the research process.

Alhassan-Alolo (2007) argues that attempts by the Interpretivist philosopher to understand social reality ought to be grounded in people’s perceptions of social reality. In this research, we also attempt to analyse the social phenomena of corruption using interpretivist philosophy. This philosophy therefore espouses an approach to the study of social phenomena that strives to describe and analyse the social, cultural and behavioural patterns of the social group. Though this philosophy comprises wide variety of intellectual undercurrents, its main thrust is using qualitative methods to investigate social phenomenon. According to Myers (2009), interpretive researchers consider that access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meanings, and instruments. Interpretivism attempts to describe and examine the beliefs, practices, and behavioural patterns of relevant social groups.

It is important to note that interpretive researchers tend not to be concerned about precise definitions. Rather, they make an assumption that meanings are emergent and determined by the context — it is these emergent meanings that they seek to explain (Myers 2009). In terms of methodology, Interpretivism employs largely qualitative methods to investigate social phenomena (Pavarala and Malik 2010). In this research, the interpretivist approach is used to analyse people’s

perception of and attitude towards corruption in their everyday life. The research methodology used in this research is discussed in the following section.

## **3.2 Phase I — A Case Study Approach**

The first phase employed a case study methodology in order to collect qualitative data for the second phase which uses a system dynamics model. The case study should include key stakeholders such as: government ministries or agencies, donor agencies, judiciary, police departments, non-governmental organisations and the general public. A combination of two methods was used to collect the data — interviews and document analysis: a) Interviews — semi-structured and in-depth interviews, which were mostly face to face. It is very important in a case study to identify and interview 'key' informants. It is also important to mention here that case study is the most popular qualitative research method used in business disciplines (Myers 2009). According to Yin (2009), interviews are an essential source of case study evidence because most case studies are about human affairs or behavioural events. Well-informed interviewees can provide shortcuts to the prior history of such situations, helping researchers to identify other relevant sources of evidence.

The main reason for selecting semi-structured interviews was to leave room for new concepts to emerge during the data collection and to allow the respondents to have some flexibility. For exploratory research, semi-structured and in-depth interviews are appropriate to find out what is happening, and to seek new insights (Robson 1993), although they require a great amount of time to collect systematic information, and data obtained through such an interview is difficult to pull together to analyse (Patton 1990), and b) Document analysis or content analysis - Content analysis is a method used in qualitative case studies to analyse documents or describe the content of communications. According to Myers (2009), one of the major advantages of the semi-structured interview is that it allows for some improvisation during an interview.

### **3.2.1 Research Strategy**

According to Polit and Hungler (1999), research strategy is a blueprint, or outline, for conducting the study in such a way that utmost control will be experienced over factors that could hinder the validity of the research results. In general, the research strategy is the researcher's broad plan for obtaining answers to the research questions that guide the study. Burns and Grove (1999) show that designing a study helps researchers to plan and implement the study in a way that will assist them to obtain the intended results, thus increasing chances of acquiring information that could be linked with the real situation. The appropriate strategy of any research is the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusion (Yin 1989).

The strategies commonly used in qualitative research are the case study, ethnography, grounded theory, and action research (Collis and Hussey 2003). The main strategy of this research

will be a case study, which will provide data for a structural model. The reason for choosing a case study strategy is due to the qualitative and exploratory nature of the study as “the flexibility of the case study strategy lends itself particularly well to exploration” (Robson 1993). A case study methodology will be helpful to obtain data by using qualitative research methods to identify various themes, dimensions, constructs and variables, which will help to understand corruption by using a system dynamic model.

To understand the extent to which corruption occurs in a particular country, researchers analyse the social, economic, cultural and government systems qualitatively, or through descriptions and observations. Qualitative research is concerned with understanding the processes that bring about patterns, and measures information based on opinions and values, not on statistical data (Yin 2009).

Case study is “an empirical inquiry that investigates a contemporary phenomenon within its real-life context”; case study is the most appropriate strategy, when “how” and “why” questions are there, resolving mainly exploratory research problem (Yin 1989). The main advantage of the case study approach is that it allows capturing the whole of real life events and its events, providing a deep and broad view of particular phenomenon (Eisenhardt and Graebner 2007).

Myers (2009) states that case study can be conducted entirely on the basis of a few interviews with key people. However, a more in-depth case study will rely on interviews with many people in the organisation, and these people will represent diverse perspectives (Boyatzis 1998). Hence, we can have available sufficient material for further analysis (Miles and Huberman 1994). In this research, we use other sources of evidence besides interviews. Myers (2009) further illustrates that written documents can be valuable as they often provide evidence for things, which people sometimes have difficulty remembering. Documentary evidence includes things such as research reports, annual reports, newspaper excerpts, and memos. Table 3.1 suggests key characteristics of a case study research.

<b>Characteristics of Case Study Research</b>	<ul style="list-style-type: none"> <li>▪ Phenomena are examined in a natural setting.</li> <li>▪ Data are collected by multiple means.</li> <li>▪ One or few entities (person, group, or organisation) are examined.</li> <li>▪ The complexity of the unit is studied intensively.</li> <li>▪ Case studies are more suitable for the exploration, classification and hypothesis development stages of the knowledge building process; the investigator should have a receptive attitude towards exploration.</li> <li>▪ No experimental controls or manipulation are involved.</li> <li>▪ The investigator may not specify the set of independent and dependent variables in advance.</li> <li>▪ The results derived depend heavily on the integrative powers of the investigator.</li> <li>▪ Changes in site selection and data collection methods could take place as the investigator develops new hypotheses.</li> <li>▪ Case research is useful in the study of "why" and "how" questions because these deal with operational links to be traced over time rather than with frequency or incidence.</li> <li>▪ The focus is on contemporary events.</li> </ul>
---	---

**Table 3.1: Key Characteristics of Case Studies (Adapted from Benbasat et al. 1987)**

In this particular instance, a qualitative data analysis approach will be adopted. Neuman (1994) contends that a “qualitative approach of data analysis is rooted in empathetic understanding, of everyday lived experience of people in specific historical settings”. The officials in the government ministries, donor agency officials, and NGO officials are living in a particular historical setting; they will approach the questions asked with a particular lens. This is important for the study; because the meaning of what they say allows the researcher to gain rich insight, far more than a quantitative research approach.

During the in-depth interviews, the researcher asked interviewees about their perception and understanding on issues related to corruption. Appendix I present the interview schedule for data collection. For the purpose of data analysis, we will also be using qualitative approach for some part of our research to give some insight into the collected data. For this reason, we plan to adopt ‘Thematic Analysis Approach’, which is a method of identifying, analysing and reporting themes within data. It minimally organises and describes data set in (rich) detail (Boyatzis 1998). In a recent study, Braun and Clarke (2006) argue that thematic analysis offers an accessible and theoretically flexible approach to analysing qualitative data. The Braun and Clarkes study outlined what thematic analysis is, placing it in relation to other qualitative analysis methods that look for themes or patterns, and in relation to different epistemological and ontological positions.

According to Maines (2000), applying a thematic analysis strategy, we can explore shared interpretations or common responses, significations and in general interpretations or representations of the issue of corruption. Each person has their own interpretation or perception, based on their life experience and their interaction with other people. The objective of applying the thematic analysis strategy is to present these shared meanings and describe them as faithfully as possible.

### **3.2.2 Data Collection**

As discussed above, the research method used is a semi-structured interview comprising a group of questions that are related to the research objectives. Instead of asking only specific questions, a group of questions, ‘indicative and specific’, were arranged and then improvised on during the interview. The researcher goes into the interview with specific questions and develops them on site as the respondents began to answer questions.

After obtaining approval from The University of Auckland Human Participants Ethics Committee and having secured the funds for the fieldwork<sup>10</sup> (see Appendix II). Data collection was solely the responsibility of the researcher. The researcher conducted 30 in-depth interviews from April-June 2009 in (Islamabad) Pakistan, which looked into individual perceptions of corruption.

---

<sup>10</sup> In observation of The University of Auckland Human Participants Ethics Committee, identities of respondents are not disclosed and details of agencies disguised.

The reason for selecting Islamabad for this case study is that all the federal ministries, donor agency offices and non-governmental organisations are located in the capital city (Islamabad).

According to the National Corruption Perception Survey (TIP 2006), the most corrupt agencies in Pakistan are: 1) Police, 2) Power, 3) Judiciary, 4) Land, 5) Taxation, 6) Custom, 7) Health, 8) Education, 9) Railway, and 10) Banks. In the case of donor agencies and non-governmental organisations, individuals were selected on three principal criteria: (a) high position within institutional hierarchy (b) working in the domain of governance or anti-corruption and (c) some professional experience with corruption-related issues. In the case of the general public, the researcher interviewed businessmen, retired government officials, lawyers, and individuals who were involved in policy matters in government.

This research mainly focuses on individual perceptions of corruption to gain an understanding of corruption. This perspective is related to our interest in the study of individual perceptions of those economic, social or cultural processes that have an overwhelming presence in their daily lives. Interviews were carried out on the basis of the following categories: (a) perception of corruption, (b) examples of corruption; (c) seriousness of corruption in Pakistan; (d) dynamics of corruption; (e) causes of corruption; (f) consequences of corruption; (g) corruption and trust in government and private institutions; (h) the role of the anti-corruption agencies; (i) the role of NGOs; (j) measures for combating corruption; (k) the role of donor agencies; and (l) the role of social and religious values.

Myers (2009) states that if someone decides to conduct interviews for their research then one should need to tell people at the start what your research is about, why you are doing it, and what you will do with your findings. During data collection, we first give Participation Information Sheet (PIS) approved by The University of Auckland Human Participants Ethics Committee, to the interviewees (see Appendix III), which highlighted the purpose of this research. Yin (2009) suggests that it is important to get informed consent from all participants who may be part of the case study, by alerting them to the nature of case study and formally soliciting their participation in the study. The researcher recorded almost all interviews with the full consent of participants; and these were transcribed by a professional firm at a later time for data analysis (see Appendix IV). One interviewee did not want to be taped, so detailed notes of that interview were taken, while a couple of interviewees sent a completed interview agenda via email.

All interviews were conducted in English or Urdu (national language in Pakistan), in face-to-face interviews. 70 per cent (21 interviews) were conducted in English and the rest 30 per cent (9 interviews) in Urdu. Where it appears a certain question is not meeting with any reaction from an interviewee, an improved formulation was sought. Respondents were given an opportunity to peruse the interview schedule, prior to the interview. Interviews were conducted in a quiet and relaxed environment allowing the interviewees to speak freely, without disturbances or intrusions. The duration of the interviews was 45-90 minutes.

There is no overlapping of data collection and data analysis since all interviews are conducted consecutively in one phase. As mentioned earlier, the type of interview schedule used in this research is of semi-structured. According to Myers and Newman (2007), in this type of interview schedule, the researcher prepares questions before the actual interview but is open minded on the agenda for other questions that might arise during the interview. Interviewing individuals with a so-called incomplete script provides the researcher with the advantage of having laid out the intended interview and research direction to the interviewee yet still being able to ask further questions, if appropriate. An additional advantage of this type of interview is that areas discussed and the questions asked can be adapted from one interview to another in the case of disclosures of new aspects. The prepared questions are designed as open-ended question, which has the intention of obtaining rich qualitative data from the interviewees (Boyatzis 1998, Collis and Hussey 2003).

### 3.2.2.1 Participants in the Case Study

Table 3.2 provides a brief overview of the thirty interviews taken from government ministries/departments, donor agencies, non-governmental organisations and the general public. A total of 30 semi-structured interviews were carried out, of which 6 were with key personnel from government ministries/departments. Seven semi-structured interviews were carried out with key personnel/experts from donor agencies responsible for matters related to anti-corruption and governance-related issues. Semi-structured interviews were carried out with heads of ten non-governmental organisations working in anti-corruption, consumer protection, education, policy research and rural support sectors. Seven semi-structured interviews were conducted with citizens from different walks of life. The information is made anonymous throughout the thesis, in order to ensure participant anonymity, by using alphanumeric codes (see Table 3.2).

Sector	Interviews	Participants/Codes	Group Totals
<b>Government Ministries / Departments</b>			
Anti-corruption	1	Head of Section / Govt_3	6 (20 per cent)
Bank	1	Middle Management / Govt_6	
Education	1	Head of Department / Govt_5	
Health	1	Head of Section / Govt_4	
Police	1	Deputy Inspector General / Govt_2	
Revenue	1	Middle Management / Govt_1	
<b>Donor Agencies</b>			
Donor Agency (Foreign County)	2	Middle Management / Donor_2, 6	7 (23 per cent)
United Nations	4	Head of Different Sections / Donor_1, 4, 5, 7	
World Bank	1	Head of Section / Donor_3	

<b>Non-governmental Organisations</b>			
Anti-corruption	1	Head of Institute / NGO_8	10 (33 per cent)
Consumer Protection / Legal Aid	2	Head of Institute / NGO_4, 10	
Education	1	Head of Institute / NGO_7	
Policy Research	3	Head of Institute / NGO_1, 2, 5	
Rural Support	2	Head of Institute / NGO_6, 9	
<b>General Public</b>			
Businessmen	2	Private Business / Citizen_1, 3	7 (23 per cent)
General Public	3	Citizen from different walks of life / Citizen_2, 4, 7	
Lawyer	2	Supreme Court Lawyer / Citizen_5, 6	
<b>Total Interviews</b>			<b>30</b>

Table 3.2: Interviewee Information

### 3.2.3 Difficulties in Studying Corruption

In any research project, researchers are expected to adopt high standards of academic rigour, and to act with honesty and integrity. Qualitative research by its very nature is engrossed in a chaotic and messy reality of on-the-spot personal interaction (Holbrook 1997). Ethical issues, such as those related to informed consent and confidentiality are more probable to arise in qualitative research. Some difficulties emerge specifically because a high level of rapport, so important for many characteristics of qualitative research, has been established between researcher and participant. Informed consent is seen to be one of the most significant issues in qualitative research. In fact, it is regarded as the 'key issue' in research with human beings (Bogdan and Taylor 1992).

For this study, the researcher invited participants by sending a Participant Information Sheet. From more than seventy invitations only a couple of them responded via email. To carry out such a large number of interviews on the topic of corruption the researcher has to rely on his contacts, as participants were a bit scared to give an interview to someone to whom they don't have any connection. In a few cases a snowball technique has been used to select participants but in most cases personal contacts were the easiest way to approach participants. According to Konza (1998), covert research is claimed to have some validity if it is used to expose malpractice or corruption, or, if there is no risk to the participants, it is largely rejected and is seen by many as being intrinsically wrong. Some researchers argue that "the foremost consideration in research should be given to the dignity of the research participants, and that on these grounds alone, deception in research can never be condoned" (Kiegelmann 1996).

Corruption is a difficult and very sensitive issue which demands lots of safeguards for participants. To achieve a somewhat coherent understanding of statements, actions and perceptions, which may prove to be varied and maybe ambiguous, it is important to engage in participant observation in various social situations, as well as conduct different sorts of interviews

and conversations with different stakeholders - ranging from 'informal conversations' to 'structured interviews' (Bernard 1994). Wadel (1991) argues that a good way of gaining access in a field is to integrate oneself into the system one wants to investigate.

Stulhofer et al. (2008) state that the research on corruption is an important element of an efficient anti-corruption strategy. It is further argued that since corrupt practices occur in the 'gray area' of social behaviour — which makes measuring the level of corruption very difficult — the research on corruption is often descriptive and suggestive at best. The indirect approach to studying corruption (via its perception) prevails and even though it remains open to criticism it is usually assumed that perception of corruption is a reasonably approximate indicator of the real level of corruption (Lambsdorff 1999).

According to some researchers, “studies on corruption were limited due to ethical concerns, cultural sensibilities, and methodological difficulties in the past. The reason for facing such problems were mainly related to the ethical concerns that stemmed from the researchers having to resort to 'gift giving and bribery themselves, and researchers exposing informants and putting themselves in danger as they explored the nefarious realms of organised crime and corrupt politics” (Haller and Shore 2005). Andvig et al. (2000) suggest that corruption is difficult to approach methodologically because of its complex nature and because individuals are hesitant to admit their interaction with it even when it is pervasive.

Haller and Shore (2005) suggest that valuable information on the incidence of corruption and corrupt practices can also be collected through interviews. Suitable methods that can uncover the popular and local 'semiotics' and 'ethics' concerning corruption can be applied in informal interviews. Focus group discussions can also be fruitful in some situations. Case studies, whether of specific interactions or episodes or particular institutions, can also be fruitful. According to Blundo and Sardan (2000), the significance of methodological triangulation approaches and methods can be combined and used in parallel, like, for instance, interviews combined with observations and newspaper reports or court hearings, to substantiate and verify the findings.

According to Yin (2009), case studies present a more difficult situation than when using other research methods because these interactions are not essentially as structured as with other methods. It is also important to protect those who participate in the study from any harm, including avoiding any deception in the study. However, Miller (2006) argues that if there is any contentious issue then covert participant observation can be used. Myers (2009) suggests that covert observation can be used if it is the only way to obtain data. Myers further stated that the covert participant observation might be the only way to study, for example, crime or corruption. Qualitative research progresses as you proceed with data collection and analysis. Plans that have been made in the office or at computer in the quiet of their own space by researchers may need to change as they proceed in the real world.

### 3.3 Thematic Analysis

When data is analysed by theme, it is called thematic analysis. This type of analysis is highly inductive, that is, the themes emerge from the data and are not imposed upon it by the researcher. In this type of analysis, the data collection and analysis take place sequentially. Even background reading can form part of the analysis process, especially if it can help to explain an emerging theme. Thematic Analysis is a process to be used with qualitative information (Boyatzis 1998). It is a qualitative data analysis method which involves the coding of qualitative data. By making use of coding, qualitative data can be analysed meaningfully while maintaining relations between the constructs.

Workers' definitions of corruption and their judgments of its individual and combined effects were analysed by Boniolo and Elbert (2005), using thematic analysis. The analysis takes into account that people's theories about society and corruption are interlinked with the beliefs and emotions that they relate to corrupt practices. During the in-depth interviews, the researchers asked interviewees about their ideas, perceptions and interpretations of corruption-related issues. This study applied a thematic analytic strategy which endeavours to discover lines of thought, interpretations of social practices that the interview participants categorise as corrupt and the underlying meaning of corruption that they imply.

Four stages in developing the ability to apply thematic analysis are illustrated in Table 3.3. According to Boyatzis (1998), in the first two stages of developing thematic analysis, openness to information and discipline are important in developing codes, which involves recognising (seeing) an important moment and encoding it (seeing it as something) prior to a process of interpretation (Boyatzis 1998). The author further emphasised that coding skill can be primarily developed and refined through practice. Once a researcher has developed several codes for different themes, he or she will typically become adept at code development. In the last stage of thematic analysis, the researcher must interpret the information and themes in a way that contributes to the advancement of knowledge and theory (Crabtree and Miller 1999).

<b>Sensing themes</b>	That is, recognising the codable moment.
<b>Doing it reliably</b>	That is, recognising the codable moment and encoding it consistently.
<b>Developing codes</b>	That is, developing and refining through practice, practice, and more practice.
<b>Interpreting the information and themes</b>	That is, contributing to the development of knowledge in the context of a theory or conceptual framework.

**Table 3.3: Four Stages of Thematic Analysis (Boyatzis 1998)**

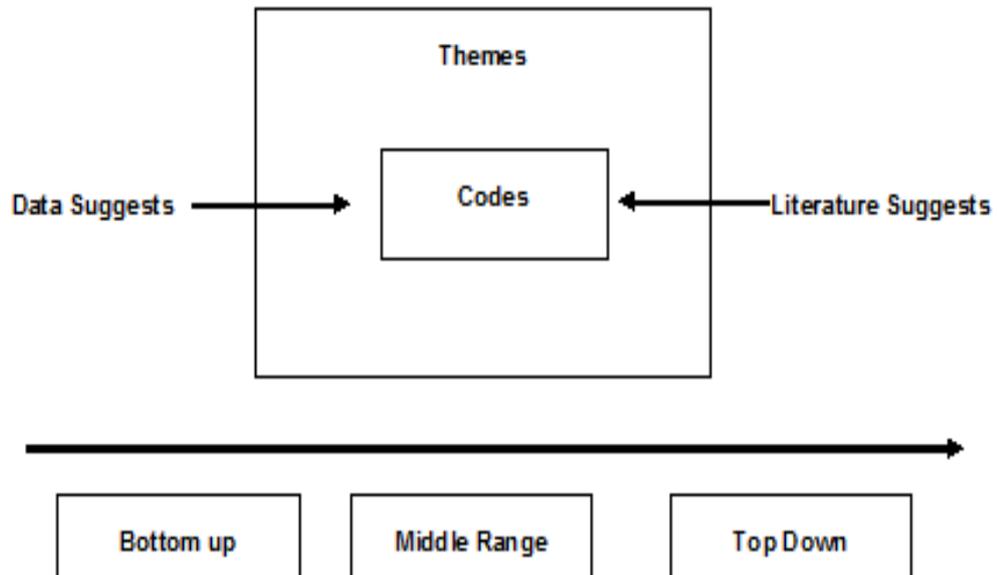
Braun and Clarke (2006) suggest that some of the stages of thematic analysis are similar to the stages of other qualitative research, so these steps are not essentially all unique to thematic analysis. The process of thematic analysis starts when the analyst begins to observe, and look for, patterns of meaning and issues of potential interest in the data — this process can be started

during data collection (Tuckett 2005). The final stage is the reporting of the content and meaning of themes that emerges from the data, where “themes are abstract (and often vague) constructs the investigators identify before, during, and after analysis” (Ryan et al. 2000).

According to Braun and Clarke (2006), thematic analysis is a comparatively straightforward form of qualitative data analysis, which does not involve the same comprehensive theoretical and technical knowledge that approaches such as Discourse Analysis or Content Analysis do. Boyatzis (1998) suggested that the stages of learning thematic analysis follow a sequence similar to that of learning a new language. According to some qualitative researchers, it is fairly easy to conduct a good thematic analysis on qualitative data, even when you are still learning qualitative techniques (Braun and Clarke 2006, Elliott et al.1999, Parker 2004). Myers (2009) suggests that thematic analysis questions the usual systematic categorisation of data into themes and opens up the hierarchy of classification to see what gets left out.

Urquhart (2012) suggests that a thematic analysis framework is in general constructed from the literature, applied to a phenomenon, and then presented — often with some revisions after its application, as a theory building contribution. When gathering sub-themes from data to obtain a broad view of the information, it is easy to see emerging patterns. Codes can be described as tags or labels the researcher assigns as units of meaning to the qualitative data, gathered during the data collection process (Miles and Huberman 1994). The level of coding depends on the researcher’s preference. In general, codes can be allocated to words, phrases, sentences, or whole paragraphs. Depending on the objective of the researcher, four different types of codes can be applied: open codes, selective codes, theoretical codes and pattern codes. From the first to the latter, the degree of inference increases. In this research primarily interpretive codes are used to analyse the raw data. These codes are mainly assigned to phrases and sentences. The goal is organising and categorising the chunks of information according to some system in order to relate the clusters to certain research questions, hypotheses, constructs, or themes (Miles and Huberman 1994).

According to Urquhart (2012), two approaches (bottom up and top down) to coding can be used at a higher level of analysis. As illustrated in Figure 3.3, initially, the researcher can build a thematic framework from themes suggested by the data. Then a thematic framework can be built from relevant literature and applied to the data. Obviously, this echoes top down coding, but at a higher level. Of course, a thematic framework can be built both from the literature and themes from the data itself.



**Figure 3.3: Approaches to Coding (Adapted from Urquhart 2012)**

Obviously, manipulating the massive amount of data requires computer aid. Electronic files were created and organised for the transcripts from the in-depth interviews. NVivo (Version 9.0) software package was used after completing manual coding. Despite the helpfulness of using such powerful software, the analysis takes place in the researcher's mind. In the final analysis NVivo® is no more than a database, although extremely useful in maintaining the chain of evidence for a massive amount of data originated from a complex reality (Strauss 1987, Yin 2009).

On the other hand, Gibson (2006) argues that there are some serious issues in undertaking thematic analysis. "One of the essential positions related to qualitative research pertains to the idea of interpretivism: that we are interpretive in our actions and in our understanding of the actions of others; that we impose meaning on the world; that we inhabit cultural worlds and engage in cultural practices that are defined by shared interpretations" (Fereday and Cochrane 2006). Table 3.4 sums up the advantages and disadvantages of a thematic analysis approach (Braun and Clarke 2006).

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Flexibility.</li> <li>• Relatively easy and quick method to learn, and do.</li> <li>• Accessible to researchers with little or no experience of qualitative research.</li> <li>• Results are generally accessible to educated general public.</li> <li>• Useful method for working within participatory research paradigm, with participants as collaborators.</li> <li>• Can usefully summarise key features of a large body of data, and/or offer a 'thick description' of the data set.</li> <li>• Can highlight similarities and differences across the data set.</li> <li>• Can generate unanticipated insights.</li> <li>• Allows for social as well as psychological interpretations of data.</li> <li>• Can be useful for producing qualitative analyses suited to informing policy development.</li> </ul>	<ul style="list-style-type: none"> <li>• Focus – can be too flexible – analysis needs focus and clear thinking.</li> <li>• Tends to be descriptive (limited use for hypothesis testing).</li> <li>• Analyses across cases (not within).</li> <li>• Limited interpretative power beyond mere description.</li> <li>• Can be labour intensive.</li> <li>• Subject to researcher bias.</li> <li>• Can have limited generalisability.</li> <li>• Difficult to establish reliability &amp; validity.</li> </ul>

**Table 3.4: Advantages and Disadvantages of Thematic Analysis (Braun and Clarke 2006)**

According to Boyatzis (1998), if we convert themes into codes and then we count presence, instances, frequency, or intensity this does not in and of itself create links between quantitative and qualitative methods. The linkage between qualitative and quantitative methods might be desirable because it allows researcher to combine the richness and uniqueness of qualitative information with the precision and discipline of quantitative methods. The thematic analysis approach is used to analyse the qualitative data gathered from the interviews. As discussed earlier, the main objective of this study is to understand the issue of corruption in depth by using System Dynamics Modelling. Therefore, the goal is to use qualitative research methods to analyse the data and provide a foundation for the System Dynamics Model. Themes that come from qualitative data analysis can be operationalised in a System Dynamics Model.

### 3.4 Phase II — Systems Approach

*“.....We accept the existence of schools of engineering and schools of medicine. When will we have schools of system dynamics and courses throughout an entire university devoted to the design and management of complex feedback systems?”*

System Dynamics — The Next Fifty Years, Jay W. Forrester (2007)

System dynamics models mainly depend on three sources of information: a) numerical data, b) the written database (reports, operations manuals, etc), and c) the expert knowledge of key participants in the system (Maani and Cavana 2007 and Sterman 2000). The numerical database is

very small as compared to the written database which is quite large, and the expert knowledge of key participants is vast. System dynamicists mainly use all three sources, with particular consideration to the expert knowledge of key participants. Through the use of available data and verbal descriptions provided by experts, the system dynamics modelling process brings new concepts and/or previously unknown but significant variables.

Many researchers recently used computer-based tools of the systems approach (computational models) to understand the phenomenon of corruption in the real world. These computational models performed by using different software e.g., iThink/Stella (Richmond and Peterson 1997), Vensim (Ventana Systems 2002), Powersim (1994), SWARM, NETLOGO, FactionSim (Silverman 2007), MAPSYS etc. According to MacDonald et al. (2011), "system dynamics models are excellent tools to study problems that occur in closed-loop systems, systems in which conditions are transformed into information that can be observed and acted upon in order to change the initial condition". For example, when the backlog of pending cases for state prosecutors increases beyond a certain level it sends a signal to state prosecutors that additional plea bargains may be required in order to reduce the backlog to an acceptable level. This completes a feedback loop. However, this same feedback loop could also work in the opposite direction. If the backlog of cases is below some desired or acceptable level it will indicate to state prosecutor's that the need to plea bargain, for purposes of reducing the backlog of cases, is no longer required and the willingness of state prosecutor's to offer plea bargains will be reduced.

Hammond (2000) modelled corruption as a game theoretic micro-level interaction, using an agent-based computer model with heterogeneous agents. The model makes use of the unique dynamics of the agent-based technique to allow a transitional behaviour that differs substantially from existing literature. Hammond created two similar but distinct agent populations i.e., 'bureaucrats' and 'citizens' in a simple simultaneous game with fixed strategies – "corrupt" or "non-corrupt". The interaction was modelled on a real world situation resembling tax collection, with potential private gains to be realised through successful collusion.

In a recent study, Louie and Carley (2007) argue that to study social systems has attracted criticisms using multi-agent models because of the challenges involved in their validation. The study concluded that multi-agent models for social systems are most useful when a) data collection from the real-world system is very costly in terms of time or money or if it puts human lives at risk and b) when the connections between micro-macro behaviours are not well-understood.

Silverman et al. (2008, 2009) discuss the possibility of using a generic game simulator for social scientists (a new approach in social sciences) and policymakers so that they can use it to propose a class of conflicts or cooperation usually encountered in today's world. Silverman created a game generator (FactionSim) where one can relatively easily recreate a wide range of social, economic, or political phenomenon so that an analyst can participate in and learn from role-playing games or from computational experiments about the issues at stake (e.g. corruption, political instability etc). This game generator can be considered as a kind of agent-based modelling

framework. Silverman's approach is quite different from existing agent-based models because it is a framework that is designed for implementing highly detailed, cognitive agents in realistic social settings.

This study (Silverman et al. 2008) attempts to depict a fairly universal class of leader-follower games that groups often find themselves in and that are worthy of simulation studies. Specifically, the vast majority of conflicts throughout history ultimately centre around the control of resources available to a group and its members. This could be for competing groups in a neighbourhood, town, region or nation, or even between nations. Further, it applies equally to social, political, and/or economic factions within these geographic settings. Artificial intelligence (AI) models of human beings were created to develop the leader and follower agents based on available first principles from relevant disciplines in both natural and social sciences. The study tested agent based games by synthesising relevant first principles and best-of-breed social science models to expose their limitations and show how they may be improved. These predictions are examined in real world cases (Iraq) where the agent models are subjected to a validity check. In the paper Silverman et al. (2009) further describes the importance of behavioural modelling that deals with the human mind, which is quite different as compared to infrastructure system modelling. It gets information from the human mind bringing to bear psych-socio-cultural principles, rather than physics-engineering ones.

### **3.5 Soft System Methodology / Systems Thinking**

Peter Checkland's Soft System Methodology (SSM) or Systems Thinking fit, along with case studies and the conceptualisation phase of system dynamics, into Step 1 of Table 3.5. SSM is one of the most developed systems methodologies in terms of its philosophical underpinnings and theoretical premises. SSM elucidates a learning process. Although, the soft procedures employ various organisational and presentation techniques, SSM still depends on discussion and perception. According to Forrester (1992), the soft system methodologies work without a precise quantitative foundation. In recent years, there has been an increasing amount of literature on systems thinking and system dynamics suggesting that the conceptualisation phase of system dynamics has much in common with the soft system methodologies but system dynamics is mainly disciplined by an organising framework that leads to model design and simulation.

Recent studies including Patching (1990), Wolstenholm (1990), Richardson (1991), Vennix (1996), Checkland and Scholes (1999), Checkland (2007), Sterman (2000), Maani and Cavana (2007) among others who have contributed to the development of systems thinking and system dynamics. Many authors have offered definitions of the systems thinking and systems dynamics methodologies, but in this research I take the recent one provided by Sterman (2000) and Maani and Cavana (2007) as most appropriate. The development of a systems thinking and system dynamics modelling intervention involves five major phases, each involving a number of steps, as outlined in Table 3.5.

Sr. No	Phases	Steps
1	Problem structuring	<ul style="list-style-type: none"> <li>Identify problems or issues of concern to management and main stakeholders</li> <li>Collect preliminary information and data</li> <li>Conduct group sessions for creative problem structuring</li> </ul>
2	Causal loop modelling	<ul style="list-style-type: none"> <li>Identify main variables</li> <li>Prepare behaviour over time graphs (reference mode)</li> <li>Develop causal loop diagram (influence diagram)</li> <li>Analyse loop behaviour over time and identify loop types</li> <li>Identify system archetypes</li> <li>Identify key leverage points</li> <li>Develop intervention strategies</li> </ul>
3	Dynamic modelling	<ul style="list-style-type: none"> <li>Develop a system map or rich picture</li> <li>Define variable types and construct stock-flow diagrams</li> <li>Collect detailed information and data</li> <li>Develop a simulation model</li> <li>Simulate steady-state/ stability conditions</li> <li>Reproduce reference mode behaviour (base case)</li> <li>Validate the model</li> <li>Perform sensitivity analysis</li> <li>Design and analyse policies</li> <li>Develop and test strategies</li> </ul>
4	Scenario planning and modelling	<ul style="list-style-type: none"> <li>Plan general scope of scenarios and modelling</li> <li>Identify key drivers of change and uncertainties</li> <li>Construct forced and learning scenarios</li> <li>Simulate scenarios with the model</li> <li>Evaluate robustness of the policies and strategies</li> </ul>
5	Implementation and organisational learning	<ul style="list-style-type: none"> <li>Prepare a report and presentation to management team</li> <li>Communicate results and insights of proposed intervention to stakeholders</li> <li>Develop a micro world and learning lab based on the simulation model</li> <li>Use learning lab to examine mental models and facilitate learning in the organisation</li> </ul>

**Table 3.5: The Five Phase process of Systems Thinking and Modelling (Maani and Cavana 2007)**

A system dynamics model depicts a theory about a specific problem. Since any model in the social sciences is only a theory, the most that can be attained from these models is that they be useful (MacDonald et al. 2011). It has been stated that system dynamics models are useful because the mathematical foundation needed for computer simulation needs that the theory be precise. The method of combining numerical data, written data, and the knowledge of experts in mathematical form often identifies inconsistencies about how we think the system works. The model informs us by identifying these inconsistencies. On the other hand, simulation allows us to see how the complex interactions we have identified in the model work when they are all active at the same time. This is what occurs in the real system. Furthermore, we can test a variety of policies

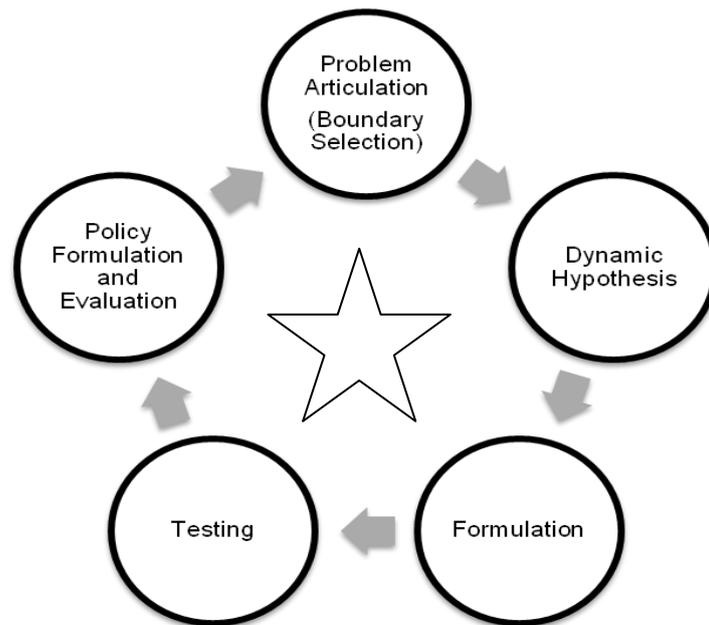
quickly to see how they play out in the long run. The bottom line is that the model will represent a theory about what is causing the problem and what can be done to solve the problem.

### **3.5.1 Research Process of System Dynamics Modelling**

This section briefly discusses the process of system dynamics modelling described by Sterman (2000). The System Dynamics Society (SDS) defines System Dynamics as “a methodology for studying and managing complex feedback systems, such as one finds in business and other social systems” (SDS 2008). System Dynamics is an aspect of System Theory which is strongly related to the principles of System Thinking. The difference between the terms will be described after presenting the development of System Dynamics methodology from the hour of birth until today.

Figure 3.4 illustrates the system dynamics process. An investigation starts at Step 1 (Problem Articulation), motivated by undesirable system behaviour that is to be understood and corrected. Understanding comes first, but the goal is improvement. System Dynamics appeals to activists. It is undertaken for a purpose. At the first step, on the right in the diagram, the relevant system must be described and a hypothesis (theory) generated for how the system is creating the troubling behaviour. Step 2 begins formulation of a simulation model. Changes in the stock and flow diagram are usually made when the simulation model is built and the model equations are written during the formulation stage of model building. Stock and flow diagrams provide a connection to simulation modelling, because they help to assign equations to the relationships between variables. Creating the simulation model requires that the rather general and incomplete description of Step 1 be made explicit. As with every step, active recycling occurs back to prior steps. In Step 2, writing equations reveals gaps and inconsistencies that must be remedied in the prior description.

System Dynamics modelling takes place in an organisational and social context. The modelling setting can be a business but may also be a government agency, a scientific area, a public policy debate, or any other organisation. According to Sterman (2000), system dynamics modelling process is a feedback process, not a linear sequence of steps. “These models normally go through constant iteration, continual questioning, testing, and refinement”. Figure 3.4 depicts the modelling process shown in Table 3.5, emphasising different aspects of an iterative cycle. The initial principle states the boundary and scope of the modelling effort, but what is learned from the modelling procedure may feed back to alter our basic understanding of the problem and the purpose of our effort. Iteration can take place from any step to any other step (indicated by the interconnections in the centre of the figure). As stated by the author, in any System Dynamics project one could iterate through these steps several times.



**Figure 3.4: System Dynamics Modelling Iterative Process (Adapted from Sterman 2000)**

#### **3.5.1.1 Problem Articulation**

It elucidates the background of the problem, the purpose of modelling exercise, and problem evolution via hypothetical reference behavioural mode that is represented in a behaviour-over-time graph (BOT). This provides a working explanation of the evolution of the problem.

#### **3.5.1.2 The Dynamic Hypothesis**

In System Dynamics modelling process, based on an initial hypothesis, a conceptual model normally consists of a causal loop diagram, stock-flow maps, or their combination. The dynamic hypothesis tries to find out the critical feedback loops that drive the system's behaviour. When quantified in a simulation model, the endogenous feedback structure of a conceptual model should be capable of reproducing the reference behavioural mode based on the assertion that "structure causes behaviour" (Sterman 2000).

#### **3.5.1.3 The Formulation of a Simulation Model**

It transforms the conceptual model into an explicit stock-flow structure. It also requires estimation of parameters, behavioural relationships, and initial conditions. The model is quantified so that simulations can be conducted.

#### **3.5.1.4 Model Testing**

Model testing involves a series of tests to evaluate the model's robustness. Usually, complete evaluation unveils errors that cause one to return to previous phases in the iterative modelling process. The sensitivity of model behaviour and policy recommendations must be assessed here to evaluate structure and variables particularly those with high uncertainty. Numerical, behavioural

and policy sensitivities to changes in parameters and structure are assessed in relation to the model's purpose.

### **3.5.1.5 Policy Formulation and Evaluation**

Policy design and evaluation often determines if the model is suitable for the specified purpose. In this phase, model users test policy options, interventions, or actions to improve understanding about potential short-term and long-term results, unintended consequences, and sources of policy resistance. This should lead to improved decision-making.

## **3.5.2 Fundamentals of System Dynamics Modelling**

This section presents the fundamentals of systems thinking that may support the choices made for the system dynamics model of corruption. It has the single objective to describe the types of complex interactions among variables and their possible behaviours. For that, diagramming tools are used in the representation of dynamic systems, enabling their understanding and the capture of mental models. According to the System Dynamics Society (SDS), "System dynamics is very similar to systems thinking and constructs the same causal loop diagrams of systems with feedback. However, system dynamics typically goes further and utilises simulation to study the behaviour of systems and the impact of alternative policies", which I will discuss at the end of this Chapter.

### **3.5.2.1 Feedback**

In a dynamic system, there is mutual influence among the elements, directly or indirectly. Reciprocity characterises any interaction as cause and effect, simultaneously, with interference both ways in the so-called feedback loop. Sterman clearly distinguishes the feedback loop as either positive or negative. The former amplifies whatever is happening in the system, as a catalyst for change, so it is also called self-reinforcing loop. On the other hand, the negative feedback loop acts as a counteract change and, therefore, is called self-correcting or balancing loop. In general, systems are combinations or networks of feedback loops, both positive and negative, from where all the complexity of the dynamics arises (Sterman 2000).

### **3.5.2.2 Causal Loop Diagram**

This simple diagram represents the behaviour of any system by mapping its elements and the relationship among them. It is an important tool for evidencing the hypothesis assumed in the model, drawing mental patterns and relevant feedback to problem solution (Maani and Cavana 2007). Causal loop diagrams contain:

- a) System elements or variables relevant to the system;
- b) Relationships: arrows indicating the influence of one element on the other. To each causal relation is designated a polarity, being either positive (+) or negative (-), depending on how the dependable variable changes with changes in the independent

variable (either with the same or with the contrary effect, respectively). It is important to note that individual links take into consideration that all other variables are kept constant (*ceteris paribus*), assuming that different interactions have different impacts in the system as a whole;

- c) Delays: effects that are only perceived after a waiting time;
- d) Feedback loops: as previously explained, either positive or negative. Positive feedback loops are also known as reinforcing loops (denoted by the letter “R” in the diagram) and negative loops are known as balancing loops (denoted by “B”). In real life, the first usually represents growth mechanisms and the second equilibrium mechanisms.

The example below is a basic representation of a causal loop diagram (Table 3.6):

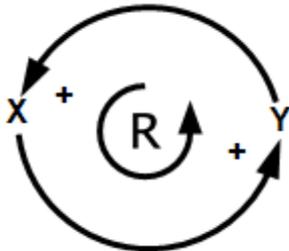
**Rule (i)** An increase in **x** results in an increase of **y**



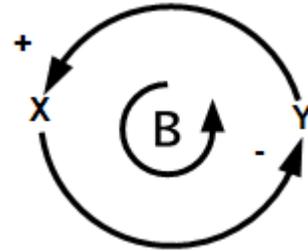
**Rule (ii)** An increase in **x** results in a decrease of **y**



**Rule (iii)** An even number of negative polarities along a loop is a reinforcing loop R



**Rule (iv)** an odd number of negative polarities along a loop is a balancing loop B



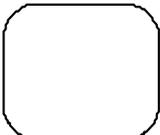
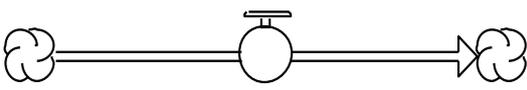
**Table 3.6: Rules of Causal Loop Diagram (Maani and Cavana 2007)**

The most important limitation of causal loop diagrams is the inability to represent stocks and flows (Sterman 2000), which will be discussed in the next section. To several systems, this means losing important information about the flow of materials and data from one loop to the other and about the accumulation of stocks in specific points of the system.

### 3.5.2.3 Stock and Flow

Stock and flow diagrams are more elaborated than causal loop diagrams, since they represent the balance of inflows and outflows of material and data in the system. The major impact of stocks in the dynamic system is the creation of imbalance in the flow rates, i.e. the system relies on how the flow rates are affected by the accumulation in and out of the stocks. Obviously, this has influence

also in the delays in response of material and data flows and, as a consequence, in decision-making. I use symbols and stock and flow diagramming as given in Sterman (2000), as given in Table 3.7.

<p>Module</p> 	<p>a. <b>Module</b> - A module is a self-contained model that specifies the inputs it needs to run and the output it will generate when the module is run.</p>
<p>Stock</p> 	<p>b. <b>Level</b> - (also called Stock, Accumulation, Integrator or State). Levels change slowly and can only be changed through inflows and outflows. Levels are accumulations of flows, whether material, monetary, or information flows. Levels create the inertia of the system and de-couple the relationship of inflows from outflows over time.</p>
 <p>Rate</p>	<p>c. <b>Rate equations</b> (also called inflows and outflows) control the flows that change the levels. The flows are symbolised with double arrows, often with a cloud on one end. The cloud is a system boundary, that is - we assume that the source of the flow does not constrain our problem (i.e., an infinitely large Level)</p>
 <p>Convertor</p>	<p>d. <b>Auxiliary</b> variables are converters/functions. Functions take information from other variables as an input and convert this into an information output. <math>Auxiliary = f(input1, input2, \dots, inputn)</math>. Auxiliaries can change values immediately.</p>

---

**Table 3.7: Stock and Flow Elements**

Mathematical notation also characterise stocks and flows, as well as all other forms of system dynamics diagrams. Integrates represent accumulation and its change by the rates of inflow and outflow, thus used for stock variables in the system. On the other hand, derivatives represent flows, with change in stocks in time, led by the difference between inflows and outflows. According to Forrester (1961), the stock and flow diagram has a precise mathematical meaning. Stocks accumulate (integrate) their inflows minus their outflows. The rate of change of a stock is the total inflow minus the total outflow. Thus a stock and flow map corresponds to a system of

integral or differential equations. Despite not being the aim of this study to represent the mathematical forms of the systems, the knowledge of this is an excellent hint for identifying if a variable in the model is either stock or flow. Stocks generally correspond to state variables while flows to rates of change in time. The great challenge in modelling a dynamic system is defining which variables are stocks and which are flows.

The identification whether variables are either stocks or flows is even more difficult when dealing with time series. The series represent variables' state in time rather than their changing behaviour. A hint for that is always verifying the measurement unit of such variables to check if they are really changing in time or are just represented in the time line. Chapter 5 defines all variables used in the model and determine their characteristics in terms of behaviour and state. Chapter 5 also presents the model of corruption in the form of causal loop diagram. This form is simpler for the first understanding of the system dynamics but is later detailed in a stock and flow diagram, from where the model derives. The thesis also uses causal loop diagrams to represent the econometric model of corruption, economic growth and income inequality developed by Ullah and Ahmed (2006), which is one of the sources to the model. The justification for that is an easier understanding of the parameters of this secondary model and their relations, what is enough for the scope of this thesis.

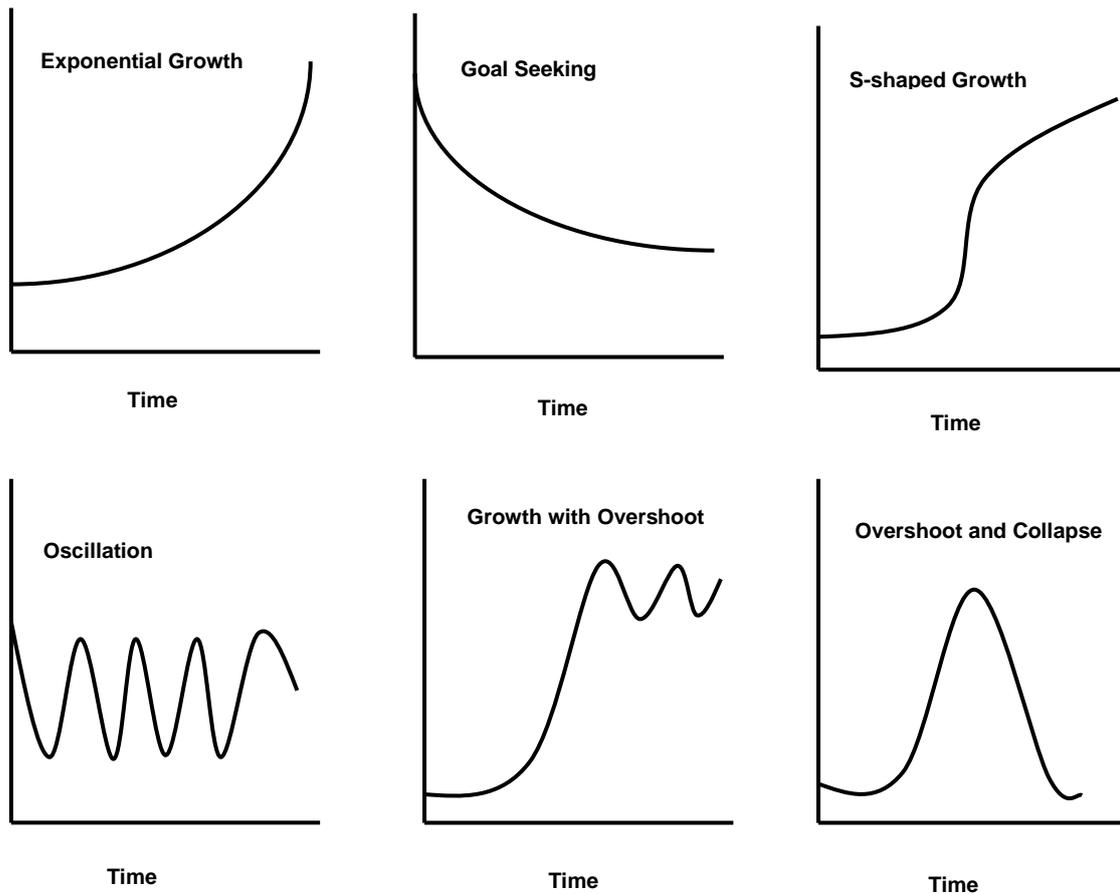
Turning this analysis into the object of study of this thesis, variables related to corruption model are given by social, economic, political, and cultural variables. A flow is the rate of change in a stock variables including in the corruption model. System Dynamics Model of corruption consists of thirteen stocks: Level of Corruption, Democratic Accountability, Law and Order, Peoples Attitude against Corruption, Government Stability, Military in Politics, Government Expenditure, Organised Crime, Level of Gross Domestic Product, Income Inequality, Economic Openness, Inflation rate and Socioeconomic Conditions. The major question in this subject would be whether inflation rate is stock or flow. Despite being known as a "rate", inflation is a general price level in a country and therefore should be considered as stock, not as flow, in a dynamic system<sup>11</sup>. However, the identification whether variables are either stocks or flows is even more difficult when dealing with time series. A hint for that is always verifying the measurement unit of such variables to check if they are really changing in time or are just represented in the time line. Chapter 5 defines all variables used in the model and determine their characteristics in terms of behaviour and state.

---

<sup>11</sup> If we talk about in terms of inflation rate and general price level, say "inflation is lower so therefore the general level of prices is falling" In fact, decreasing inflation to a lower value means that prices are rising but at a slower rate. e.g., A decrease in inflation reduced the rate of increase in price. In this case, price would be analogous to the stock variable and rate of inflation would be the analogous to the inflow variable.

### 3.5.2.4 Dynamic Behaviour

The forms of interaction among the several elements that compose a dynamic system define the behaviour of the whole structure. The combination of feedback and causal loops determine the forms of interaction, elucidating the characteristics of real-life phenomena seen in the complex world. This section briefly describes the types of behaviour of these dynamic (sub) systems. It is a preparation for the system dynamics modelling chapter, which identifies the behavioural type of each variable used for modelling. Figure 3.5 shows a graphic representation of the different behavioural types (Sterman 2000, and Maani and Cavana 2007).



**Figure 3.5: Behavioural Types of Systemic Structures<sup>12</sup>**

The model for corruption forecasting comprises one or more forms of behaviour presented above, according to the interactions present in the system. The starting point in determining the behaviour of such interactions is the analysis of the graphic forms of the variables in time. This compares the shape of such graphs to the fundamental forms of behaviour and enables the drawing of the causal loop diagrams. The thesis uses this procedure to build the system dynamics model of corruption in Chapter 5.

<sup>12</sup> The discussions of the behavioural types of systemic structures are provided in Appendix V.

### 3.5.2.5 Simulation Modelling

Simulation modelling is a particular model-building approach in operations research that has proven popular for business and economics problems (De Greene 1982). Schrage (2000) describes simulation in its simple term, “a simulation is a virtual model of a process and a model is an approximation of reality that emphasises some features at the expense of others”. Whereas, Naylor (1972) describes, simulation model-building as a numerical technique for conducting experiments with certain types of mathematical models which describe the behaviour of a complex system on a digital computer over extended periods of time. According to Ghaffarzadegan et al. (2011), the recent increase in policymakers’ attention to mostly disaggregated, agent-based simulation models provides an opportunity to highlight the unique benefits of more aggregated models in the system dynamics tradition. In Table 3.8, three main characteristics make system dynamics models especially well suited for learning about and designing effective policies: a) the feedback approach, b) the aggregate approach, and c) the simulation approach.

<b>System Dynamics Model Characteristics</b>			
<b>Characteristics</b>	<b>Feedback Approach</b>	<b>Aggregate Approach (Stock and Flow)</b>	<b>Simulation Approach</b>
The policy resistance environment	Feedback is the major source of policy resistance	Accumulations (stocks) are essential to understanding policy resistance	Illustrate why some intuitive policies lead to policy resistance and allow for the design and testing of more robust policies
Need to experiment and cost of experimenting	Feedback diagrams and mental simulation must substitute here for actual policy trials	Decreases the cost of developing and running models, allowing for more experimentation	Allow for exhaustive experimentation and games for policymakers without incurring actual social and economic costs
Need to persuade Different stakeholders	Feedback diagrams and qualitative analysis can contribute to policy discussions	Facilitates presentation of lessons to others.	Help build consensus around difficult policy problems that may otherwise have multiple interpretations
Overconfident policymakers	Causal loop diagrams reveal new insights and challenge policymakers to be wary of overconfidence	Failure to understand the dynamics of accumulation is a common source of policy error	Effectively communicate the counterintuitive nature of policy problems to policymakers who otherwise may remain unpersuaded
Need to have an endogenous perspective	Helps policymakers learn what an endogenous view is and why it is necessary to effective policymaking	Leaves more room in individuals’ cognitive capacity to concentrate on feedback and develop an endogenous perspective	Allow policymakers to explore how behaviours are created endogenously through a broad model boundary

**Table 3.8: System Dynamics Models in Addressing Different Problems**  
(Adapted from Ghaffarzadegan et al. 2011)

Simulation models offer learning environments where researchers, modellers, policy makers and others can design and test policies. Simulation modelling also provides a helpful environment where modellers can experiment with and learn about the effects of different policies without any significant social and economic cost. Moreover, simulations can help to build consensus surrounding difficult social and economic problems. Simulation modelling can support discussion and lead to the development of shared interpretations regarding the cause of problem behaviour. Even when different goals and value systems persist, simulation can help to focus the discussion on specific variables and outcomes that are the source of divergence.

---

## 4 Findings from Phase — I

*“A thematic framework is constructed from the literature, applied to a phenomenon, then presented - often with some revisions after its application, as a theory building contribution. Sometimes relationships are suggested between the themes, especially if those relationships come from the literature”.*

Grounded Theory for Qualitative Analysis: A Practical Guide, Cathy Urquhart (2012)

The previous chapter outlined in detail the methodology used in this study to collect and analyse the gathered qualitative data. In this chapter, a brief overview of analysis by themes is presented. Secondly, this chapter presents the in-depth findings from phase I of our research resulting from the thematic analysis of the 30 interviews. All findings are presented and structured according to the themes used for the analysis.

### 4.1 Analysis by Themes

Thematic Analysis is a process to be used with qualitative information (Boyatzis 1998). It is a qualitative data analysis method which involves the coding of qualitative data. By making use of coding, qualitative data can be analysed meaningfully while maintaining relations between the constructs. Taylor and Bogdan (1998) define themes as units derived from patterns such as “conversation topics, vocabulary, meanings, feelings, recurring activities or folk sayings and

proverbs". Themes can be identified by collectively taking components or fragments of experiences or ideas, which often are useless when viewed alone. It is important to mention here that thematic analysis can be developed from what has been 'said' and 'recorded' in interviews, or audio-visual recordings. The next step is to generate sub-themes, which are formed by combining related patterns observed in interview transcripts.

In this study, the data gathered from the interviews is analysed, organised, and categorised based on themes, extracted from the literature review. Table 4.1 shows how the codes derived from the thematic analysis were reflected in their larger macro analytic counterparts, the themes. In the beginning, the transcripts were subjected to open coding. An open coding line by line assessment of the data was done, to generate codes. This exercise is extremely time consuming, but has the benefits of getting many rich concepts and maintaining a very close tie with the data. The coding process involved recognising an important moment and encoding it prior to a process of interpretation (Boyatzis 1998). A 'good code' is one that takes into account the qualitative richness of the phenomenon. Open coding helps the researcher in breaking elements apart and separates the data analytically, leading to thematic conceptualisation. The themes identified in the transcripts were accordingly organised into sub-themes. Using themes as an analytic device is a useful way of scaling up analysis (Urquhart 1999).

The interviews covered a range of topics, such as: personal definitions of corruption, assessment of corruption in Pakistan, the role of non-governmental organisations (NGOs), donor agencies and the government in combating corruption in Pakistan, assessment of the public perception of corruption, the role of cultural / religious / political heritage in the dynamics of corruption, and the main efforts being made to fight corruption. The research data collected during the April-June 2009 period was coded and analysed to discover the existing patterns of understanding of corruption within the target expert groups.

Patterns of corruption vary from society to society and over time. This is particularly the case when we consider the "South", the "Third World" or the "developing countries" (Andvig et al. 2000, Kaufmann et al. 1999). In order to understand the immense diversity of its origins, forms and effects across developing countries, we should examine the roles of both the internal 'stakeholders' in developing societies (such as politicians, business cliques and junior civil servants) as well as external actors (including western multinational companies and international financial institutions). In addition, reform strategies should take account of widely differing economic, legal and political contexts.

The emerging themes for analysis were (1) Perception of Corruption, (2) Governance, (3) Effective Judiciary, (4) Social Aspects, (5) Values, (6) Poverty, (7) Transparency in International Negotiations and Funding, (8) Government Size, (9) Economic Health, and (10) Inappropriate Recruitment. (Table 4.1 — Grounding the Model — Thematic Analysis Grid)

No	Themes	Sub-Themes	Codes
1.	Corruption	a. Aspects of corruption	Lack of transparency, Kickbacks, Immoral or unethical, Need-based and greed-based, Misuse of authority
		b. Level of corruption	Pervasive – everywhere in the society, Low level is tolerable, Acceptable level of corruption, Increase of corruption in government with size, smaller government reduces corruption.
		c. Money matter	Bribe, Greasing the palms, Personal gain, Focal point, Speed money.
		d. Causes of corruption	Lust for economic gains, Extremism, Organised crime, Class distinction, Selection process.
2.	Governance	a. Aspects of governance	Bad governance, Lack of governance, Corporate governance standards, Good governance.
		b. Lack of political stability	Political will, Military in politics, Democratic government, Top leadership, Checks and balances.
3.	Effective Judiciary	a. Aspects of effective judiciary	Lack of judicial dispensation, Absence of transparency, Pay the bribe and buy justice, Strong judicial system, Process of judicial reforms.
		b. Lack of accountability	Process of putting a checks and balances, Lack of action against, influential, Political victimisation, Mechanism to rectify corruption.
		c. Rule of law	Advocacy and awareness raising, No serious resolve, Selective in enforcing law, Interested in making new laws.
4.	Values	a. Ethical and moral values	Attitudinal change is needed, Low moral values, Moral lapse, Corruption is way of life, Motivation towards honesty.
		b. Religiosity	Religious practices, Non-practicing of religion, Religious values, Religious education, Religion is not the reference point.
5.	Poverty	a. Aspects of poverty	Financial intervention is needed, Direct relationship with corruption, Corruption is epidemic, Poverty is a by-product of corruption, Gap between poor and rich increases.
		b. Income inequality	Unequal distribution of wealth, Capitalism motivates people to raise their income level, Increasing wage rate, Big family size and low income level, Lack of monetary compensation.
6.	Social aspects		Family social fabric is weakened, Taking it as a social norm, Greed for social status, Deep rooted, Lack of education.
7.	Transparency in international negotiations and funding		Third party involvement, Anti-corruption clauses, Proper monitoring system is needed, Motivation to get capital gain, Indigenous agenda, Asking for share in the project, strengthening the capacity of the government to fight against corruption.

No	Themes	Sub-Themes	Codes
8.	Regulations to create job		Limited employment opportunities, Merit based selection, No job available without <i>Sifarish</i> and bribe.
9.	Size of the Government		Big government size harmful, Insufficient resources, Small size reduces corruption, Informal economy.
10.	Economic health of a country		Privatisation, Inflation causes corruption, Government is poor, Global financial crisis

**Table 4.1: Grounding the Model — Thematic Analysis Grid**

## 4.2 Dominant Codes

Table 4.2 illustrates dominant codes for the themes represented. It also gives detail about the occurrence of themes across data. For each theme, the code which appears in most of the interview transcripts is reported in a table below. If we talk about perception of corruption in general, there is an emphasis on *misuse of authority for personal gain, and lack of transparency* in the government system prevails due to a culture of secrecy and rampant corruption.

In the theme of governance, it can be seen that there tended to be many instances of *good governance* that is the significant issue of sustainable social, political, and economic development among others. The theme of Effective Judiciary, as well as having many instances of *lack of transparency*, also had a number of instances of *political victimisation* causes politically motivated prosecutions of opposition figures by the government. More interestingly, the dominant code for the theme poverty and/or income inequality described *poverty as a by-product of corruption*, since corruption erodes opportunities for development in societies.

Number of Instances	Themes	Codes
400	Corruption	Misuse of authority, Bribe, Personal gain.
18	Governance	Lack of governance, Good governance, Political will, Military in politics, Democratic government.
63	Effective Judiciary	Pay the bribe and buy justice, Political victimisation, Selective in enforcing law, Absence of transparency.
34	Values	Low moral values, Moral lapse, Corruption is way of life, Religious values.
20	Income Inequality/Poverty	Poverty is a by-product of corruption, Unequal distribution of wealth, Increasing wage rate.
45	Social aspects	Taking it as a social norm, Greed for social status, Lack of education.
7	Transparency in international negotiations	Proper monitoring system is needed, Strengthening the capacity of the

Number of Instances	Themes	Codes
	and funding	government to fight against corruption.
10	Regulations to create job	Merit based selection, No job available without Sifarish and bribe.
8	Size of the Government	Big government size harmful, Informal economy.
23	Economic health of a country	Inflation causes corruption.

Table 4.2: Themes and Dominant Codes

### 4.3 Perception of Corruption

Corruption has been a problem in Pakistan, especially after the late 1980's when the democratic government came into power. It has been observed from the interview transcripts that tolerance towards petty or low level corruption ('favour for favour, 'service for service', the habit of handing out small gifts to public servants, etc.) is more prevalent. It suggests that there is a common public belief that corruption can be found more or less everywhere in the society — from the top, to the bottom. It has somehow become a way of life in Pakistani society, as mentioned by a few interviewees.

Themes	Sub-Themes	Codes				
		Code 1	Code 2	Code 3	Code 4	Code 5
Corruption	a. Aspects of corruption	Lack of transparency	Kickbacks	Immoral or unethical	Need-based and greed-based	Misuse of authority
	b. Level of corruption	High corruption level	Low level is tolerable	Acceptable level of corruption	Increase of corruption in government with size	smaller government reduces corruption
	c. Money matter	Bribe	Greasing the palms	Personal gains	Focal point	Speed money
	d. Causes of corruption	Lust for economic gains	Extremism	Organised crime	Class distinction	Selection process

Table 4.3: Thematic Analysis Grid — Corruption

Table 4.3 illustrates the dominant codes for the theme and sub-themes of corruption. In order to effectively examine and illustrate corrupt practices and their collective perceptions, one needs to be aware of some theoretical specificities of the word corruption. It is important to go beyond the strictly legal definition of corruption and compare it with more informal, everyday meaning and social connotations. There are some traditions, acts and practices, most people would agree in naming as corrupt acts such as bribery, paying for legally obtainable service, extortion, etc. There may be some cases of (legally) punishable acts that ordinary people do not regard as corruption, or vice versa. These may include different types of conflict of interest that

normally are missing from the collective consciousness (lack of understanding) or some practices that people do not perceive as corrupt since they are legitimised by tradition. It has been asked of our interviewees, what do they understand by the word "corruption"? For example one of the interviewees stated:

*To get undue favour by unfair means, from either public or private sector or anywhere. It does not necessarily have to be an exceptional amount but to get an undue favour, which you do not deserve, when you use unfair means (Citizen\_4).*

*Corruption is seen to exist when a power holder is, by monetary or other rewards not legally provided for, induced to take actions, which favour whoever provides the rewards and thereby does damage to the public and its interests (NGO\_5).*

Generally, there has become an acceptance of corruption in Pakistan that we call low level. But there is a point where corruption crosses the line into unacceptable and intolerable either because of its pervasiveness or egregiousness. It might be wrong to attribute the differential treatment of corruption solely to poor monitoring and weak sanctioning capacities. Most of the interviewees stated that the level of corruption in Pakistan is at a high level and is increasing. This is evidenced by the following quotes from the interviewees:

*It feels that corruption has by no means reduced as compared to the past and probably it will increase in the future. The government offices from where people are provided services, the police department, taxation, customs and other departments are known to have corruption there. Similarly the politicians who, being members of Parliament, have authority in many ways are also ill reputed in this respect (NGO\_2).*

*The perception is that there is corruption and it is growing at a high level (Donor\_4).*

*Level of corruption in Pakistan has been increasing. I do not say that it is at full peak, it may rise to some higher level as well. But presently corruption is historically at its peak level (Citizen\_2).*

Unfortunately, the existing body of research does not offer any systematic insight into socio-cultural roots of corruption and its tolerance in Pakistan. This emphasises the importance of designing and initiating qualitative studies focused on the everyday phenomenology of corruption. Even though it is perhaps true that corruption can never be completely eradicated, it is important to take into consideration both habitual and cost-benefit sources of tolerance towards corrupt acts in the fight against corruption. Referring to corruption, one of the interviewees from a government department defines corruption as:

*[...] any misuse of the resources, of the procedure, of the phenomenon, which is already determined by the country's law. When we go out of that it enters into the category of corruption (Government\_4).*

*[...] it is doing something, which is against the social norm, social practice, which is not acceptable by the society. It is more specifically doing something illegal and doing anything that is not accepted by the people around you (Donor\_5).*

*Corruption to me, is misusing of someone's power, office or position (Citizen\_1).*

In a similar manner, one of the interviewees from NGO defines corruption as follows:

*Corruption is "Misuse of Authority for Private Gain" (NGO\_8).*

Another definition of corruption mentioned by a donor agency official refers to corruption as doing something, which is not acceptable by the society. In every society and human life there are certain principles regarding distribution of rights and there are laws according to which things should be done. To exceed legal rights and to misuse authority by defying law for personal gains is corruption in broader terms. In most of the interviews with our interviewees, I found numerous references to the socio-cultural history of corruption.

### **4.3.1 Aspects of Corruption**

In many country cases, a main cause of corruption may be a self-serving political leadership and a large, inefficient and politically influenced and misdirected state framework within which individual and group private interests have priority over the collective good. Public officials have significant discretion to accumulate personal wealth through exploiting their monopolistic and irregularly paid positions, often in collusion with politicians and indigenous or foreign businessmen. The emphasis by the interviewees was put on the severity of the situation at a political level.

*At political level the government officials and politicians take kickbacks. That is a very large-scale corruption which affects the whole society (Citizen\_4).*

*Corruption starting from high level seeps down to the lowest levels of the society. When this illegitimate use of power starts from the top level it justifies the practice of misusing power for everyone to follow (NGO\_2).*

*At the higher level you see government or the public representative, elected representative, be it buying aircrafts or sea-ships or other stuff. People are asking for kickbacks (NGO\_6).*

Need-based and greed-based corruption is mentioned by the interviewees as the reasons for corruption and corrupt practices. The reason for need-based corruption is applied to low paid employees, especially those entrusted with service delivery powers and public contact. One respondent from an NGO described corruption as follows:

*Corruption is simply something, which is not transparent and which has some hidden agenda in a sense or someone wants to hide something from others (NGO\_4).*

Corruption arises out of compulsion, as those indulging in corruption are in need of the basic necessities, and lack access to social entitlement. However, need-based corruption very easily merges with greed-based corruption once need is taken as a justification by those indulging

in corruption and corrupt practices. It is because of this fact that corruption is interlinked with poverty, which is termed as need based corruption. Lack of an ethical base in societal attitudes is also mentioned as one of the root causes of corruption.

*There are generally two elements of corruption: one is need-based corruption, like if a police officer gets a pay of only 5000 rupees (NZ\$ 900) and if his wife or his child falls sick and he cannot afford their medical treatment he will start accepting bribe. Second element is called greed-based corruption which can only be tackled by the law enforcement (NGO\_1).*

#### **4.3.2 Level of Corruption**

Corruption manifests itself in different forms in Pakistan, including widespread political and financial corruption, misuse of power, embezzlement, and nepotism. Corruption is prevalent in the country in both its forms, 'petty and grand corruption'. Corruption clouds almost all levels of government; it is persistent and deep rooted. The level of corruption in the society eventually depends on the values and morals of that society. As one of the interviewees said:

*The government offices from where people are provided services, the police department, Taxation, Customs and other departments are known to have corruption there. Similarly the politicians who, being members of Parliament, have authority in many ways are also ill reputed in this respect (NGO\_2).*

Over the period of the last two decades acceptability of corruption has moderately increased in the society, and there is growing evidence that people feel guilty about their own role in corruption. Corruption undermines the authority of political institutions and political leaders, since it brings the leadership of a country into disgrace, and contempt, and makes the government less able to get the cooperation and support of the public. It is stated by interviewees that bad leadership is the main cause of corruption in Pakistan.

*The root cause of corruption is the corrupt leadership. If your leader is a pious person it is no way that you can do something wrong. When wrong acts are being accepted then you are projecting your malpractices and then you are seeing the level of corruption at all levels (Donor\_6).*

*Unless we change our leadership, our socio-political environment is not changed and you can't stop increasing the corruption (Citizen\_6).*

*I think generally the leadership or the high-level society is generally corrupt, in all segments (NGO\_4).*

The level of corruption is very high in development projects and procurement (including defence and public sector corporations) and bank loan write-offs. The common man is more involved in petty and middle level corruption that he encounters in the daily dealings with government offices like police departments, land administration, water and power etc. It is

important to note that mega corruption is generally in development projects, bank loans and procurements, which rocks the foundation of the economy. Corruption harms political and economic development as well as degrading administrative effectiveness and efficiency. As one of the interviewees said:

*I am surprised people asking for money and files are not moving because they are asking for money and projects are not moving because they ask for money and share in the project as if there are donor projects or funding to government they want their share. It's not just the government its civil society organisation you know everywhere (Donor\_1).*

*The Inspector General doesn't demand bribe himself, it is these traffic sergeants and police officers who keep their share and deliver the rest to the superiors (Citizen\_2).*

### 4.3.3 Money Matter

In many developing countries, a significant proportion of top-level civil servants are believed to be either corrupt on their own or act as collaborators, conduits or agents for corrupt Ministers. In Pakistan, an interlocking of corruption exists at different levels of the government hierarchy – elected politicians, higher bureaucracy and lower levels of government officials.

*If you want treatment for your patient and you give a bribe for that, then the patient will get timely treatment and in a better form. So corruption has a whole hierarchy from low level to high level (Citize\_4).*

*When they use these powers for their personal gains that is corruption and this is why a lot of work stops in the government offices unless a bribe is paid for it; this is also a form of corruption (NGO\_2).*

*Sometimes you do legal things also which are stuck up in the system, so you are using kind of speed money to speed up the process (Donor\_3).*

*It is not only that you pay money and get your job done but even if you are close to someone influential or a supporter of an important figure, you will get support and favours done for you, which is an illegal or out of the way support (NGO\_3).*

Corrupt practice mentioned by a few interviewees refers to bribes that have to be paid to the authorities of the land administration. The interviewees mentioned that at lower levels of civil service, corruption mostly takes the form of 'speed money' for speeding up approvals and for providing (or not withholding) rightful services (e.g., in utilities such as telephones, electricity and other civic services).

*For example if I have to get the registry of my house or I have to buy land or I have a work that involves a government department and therefore involves money (Citizen\_9).*

*I had bought a small piece of land once, so when the Patwari [Village Accountant] came I had to give him money for dinner then I had to give him the tagged amount other than the*

*legal fees, which he said was his own personal fee and was about 7 % of the value of the land (Citizen\_4).*

*I constructed a house last year; it was completed in December 2007 and in 2008 I regularly visited WAPDA office (Water and Power Development Authority) for 6 months asking for an electricity connection. They asked me for Rupees 25,000 (US\$300) (NGO\_9).*

*If you go to a Patwari [Village Accountant], he is a very corrupt official of the government that is very corrupt system (Donor\_3).*

According to numerous respondents, the police are one of the most corrupt institutions in Pakistan. The following quote is a good example of interviewees' opinions:

*I had an accident once and even fought a case for eight years in the court. The police took 10,000 rupees [US\$ 125] from me in the police station (Citizen\_2).*

*The Inspector General doesn't demand bribe himself, it is these traffic sergeants and police officers who keep their share and deliver the rest to the superiors (Citizen\_9).*

#### 4.3.4 Causes of Corruption

In the social, cultural and political matrix of Pakistani society, causes of corruption can be found which presently are faced with a gradual loss of values system and even identity. It is extremely difficult to determine the exact causes and their degree in matters pertaining to human psyche and temperament, yet according to a Corruption Perception Survey carried out by Transparency International Pakistan in year 2010, the following causes have been determined as the major contributors towards corruption and their estimated degree in percentage terms has also been indicated in Table 4.4. It also gives insights into the 'Other' causes in Table 4.4, and, importantly, how corruption is perceived by those that live with it and its effects day to day.

Causes of corruption	Percentage
Lack of accountability	47.09
Lack of transparency	12.94
Discretionary power	11.42
Monopoly of power	8.80
Low salaries	10.13
Shortages Demand & Supply	2.17
Power of influential people	4.40
Red tape	1.92

**Table 4.4: Causes of Corruption (Transparency International Pakistan 2010)**

Petty corruption is usually for getting access to public services or to avoid or twist the laws, the rules and regulations. On the other hand, middle and grand corruption takes place in public

contracting and procurement. In a predominantly capitalist economic system and the increasing observance of principles of the free market, arise in corruption and speed money clearly makes economic sense. It has been mentioned by a respondent from a donor agency that “Bribe serves as an incentive for the government servants”. It is a sort of price that equates supply and demand in every field and office. Ironically in many cases it reduces transaction costs for the petitioners/applicants by saving their time and miscellaneous costs on frequent visits.

*All the big public sectors like health, education, judiciary, police; like if you go to a police station with DIG's [Deputy Inspector General of Police] reference, they will not do your work, they won't charge you any money but then they will also not do your work. But if you have paid money, there is a surety that your job will be done (Donor\_2).*

Besides the widespread nature of petty and mega corruption, the interviewees identify as corruption the misuse of power by military officials. It is important to mention here that Pakistan has remained under military rule for twenty nine out of its sixty years of existence.

*In our country, an extreme example of corruption is when military dictators overtake the government and start taking decisions for the country on the basis of power. Corruption starting from such high level seeps down to the lowest levels of the society. When this illegitimate use of power starts from the top level it justifies the practice of misusing power for everyone to follow (NGO\_2).*

According to one of the interviewees, perceptions of widespread civilian government corruption favours involvement of military in politics in Pakistan.

*All the people who were actually black-listed in the NAB [National Accountability Bureau] are back in the government [Present Government] then how do you say they are fighting it, [against corruption] they are not fighting it. There is no commitment from the government right now. Not in the present government but some commitment with Musharraf government [Ex-President and Military Dictator]. Not because, I am for military government, I am for democracy. But democratic government have not shown any commitment to fight corruption (Donor\_1).*

## 4.4 Governance

This framework — generally termed “governance” — is expected to include a number of key components: political legitimacy for the state through free elections and transfer of power, and an effective political opposition and representative regime; separation of powers; effective internal and external audit; effective means of fighting corruption and nepotism; accountability through transparency and the provision of information; competent officials, such as trained public servants; realistic policies and low defence expenditure; human rights as indicated by freedom of religion and movement; impartial and accessible criminal justice systems; and the absence of arbitrary government power. An interviewee stated:

*Governance actually includes public institutions, because the public institution is a place where everybody has to interact (Citizen\_1).*

Good governance concerns not just the organisation and activity of government but also the ends to which they are put in terms of achieving human and institutional development, along with levels of economic development which “benefit the population as a whole” and promote the “literary, education and employment opportunities” which in turn enhance the ability of the population to demand, and contribute effectively in, good government (World Bank, 1991). One of the interviewees said:

*I think this [corruption] is an epidemic and it is increasing. Unless and until we have a leader who is very clean and transparent and he or she takes up good faith so only then we will be able to hope for a country with less corruption. I don't see it is going to be eliminated in a couple of years but I see there is a possibility of decrease provided good governance (NGO\_6).*

Interviewees stressed that a good government is an important prerequisite for good governance. Good government is intended to lead toward a governmental structure accepted by a participatory public as legitimate, responsive to the needs of the people and committed to improving its interests, competent in providing law and order and delivering public services, and providing an effective policy environment and open-handed in its conduct. Table 4.5 describes the dominant codes for the theme and sub-themes of governance, which includes aspects of governance, lack of political stability and lack of trust in government.

Theme	Sub-Themes	Codes				
		Code 1	Code 2	Code 3	Code 4	Code 5
Governance	a. Aspects of governance	Bad governance	Lack of governance	Corporate governance standards	Good governance	
	b. Lack of political stability	Political will	Military in politics	Democratic government	Top leadership	Checks and balances

**Table 4.5: Thematic Analysis Grid — Governance**

#### 4.4.1 Aspects of Governance

As a prerequisite for sustainable development, moves toward dealing with corruption have been emphasised while evidence of so doing is taken as a key component of a commitment toward good government, as mentioned by two interviewees:

*In the last 3-5 years government has just introduced this governance, good governance, accountabilities and institutions like NAB [National Accountability Bureau], which was established sometime back and now it's I mean a little bit democratised (Government\_4).*

*The biggest question at this moment is about the good governance of this government. And, if there is no good governance, how can you expect that they are serious about doing anything (NGO\_4).*

Corruption no longer seems to be just a short-term disease of modernising societies that development, literacy and good public ethics will alleviate. The deteriorating economic, political and social effects of both petty and grand corruption can be felt everywhere. One of the interviewees said:

*I think the only right thing they [present government] are doing they are talking a lot about good governance. The wrong thing is they are not practicing (NGO\_4).*

Bad governance is characterised by a) bad performance of the government combined with a negative performance in making and implementing political decisions, b) disruptions in the dealings between governmental and non-governmental actors, and c) defective consideration for structures that are anterior to the state.

For a long time, development politicians have been indicating that good governance is a prerequisite of sustainable development, and that problems with the latter will essentially arise from bad governance. Next to the discussion on good governance, an argument about what might be described as bad governance is gaining momentum as well, although ideas about the precise meaning of the term governance differ. It was stressed by interviewees that good governance creates a good environment for investment, including investment in people, and leads to higher income, reduces poverty, and provides better social indicators.

It was stated by the interviewees that the institutional decays in Pakistan have led to bad governance manifested in corruption, inefficiency, ineffectiveness, inaccessibility, intractability and lack of motivation and incentives.

*Wherever you have corruption, it starts from these reasons but it carries on because of ineffective governance (NGO\_6).*

*The government has always set-up so many organisations; there is the anticorruption department that may be the most corrupt department in the government. There is National Accountability Bureau, before that there was 'Ehtesab Bureau' [Accountability Bureau]. So those things they are trying to reduce or keep a check on corruption but at the same time those are very ineffective (Donor\_3).*

A few interviewees advocated that good governance requires that institutions and processes try to serve all stakeholders within a reasonable timeframe. It was also mentioned by the interviewees that society's welfare depends on ensuring that all its members feel that they have a stake in it, and do not feel excluded from the mainstream of society.

#### **4.4.2 Lack of Political Stability**

Political instability and insecurity have dominated Pakistan over the last 50 years, marked by frequent regime changes and unrest. In the 1990's, four different democratically-elected governments held power under the same two political leaders. Each government was either

dismissed or overturned, often as a result of corruption charges and allegations of power misuse. As an interviewee stated:

*[...] the leadership and the high-level society is generally corrupt, in all segments (NGO\_4). Unless we change our leadership, if our socio-political environment is not changed, you can't stop increasing the corruption (Donor\_6).*

Major sectors of Pakistan's social, economic and political structure, particularly politics and governance institutions, are dominated by the elites or feudal families hindering the rule of law and democracy for the sake of their own interests. One interviewee said that the current government is corrupt because of:

*[...] massive cases of corruption involving the present government, in fact they are a part of the NRO [National Reconciliation Ordinance] so I think this is the most corrupt government in the history of Pakistan (NGO\_9).*

Besides considering that the government is elected through an electoral process, the interviewees also think that the current regime is highly corrupt due to their infamous leadership. For example one of the interviewees said:

*I think the present government has exceeded the limits, which are normally acceptable from a corrupt government. For instance the President of the country is the most corrupt man and in the international world he is known as Mr. 10 %, notwithstanding the fact that the international community is helping him. Yet they know that they are dealing with a very corrupt head of state (Citizen\_5).*

The interviewees mentioned that it is mainly the privileged class gaining in regard to economic and social justice, access to quality education and health facilities or access to the judicial system. It was stated by the interviewees that due to political instability and military coup, the government has never been given a chance to flourish. If Pakistan is to achieve sustained socio-economic growth with healthy foreign investment, corruption must be eliminated at all costs.

*[...] there is no political- will there is no desire to eliminate corruption from the country. It not so much the issue of resources, it is the issue of the will and the vision (NGO\_7).*

Interviewees also stressed that a strong political will, rule of law, backed by an honest and incorruptible judiciary, will surely help achieve the dream of a strong, progressive and prosperous Pakistan.

*Strong political resolve is required to alleviate corruption (Government\_1).*

*When there will be a political commitment and when political figures will not ask for favours and ruin the system. I think there are only two institutions; judiciary and political (Donor\_2).*

*There has to be a political commitment to fight corruption and all the kind of perceptions of corruption have to be removed through very firm action (Donor\_4).*

## 4.5 Effective Judiciary

An independent, unbiased and well-informed judiciary holds an important place in the understanding of just, honest, open and accountable government anywhere in the world. It was stated by the interviewees that a judiciary must be independent of the executive if it is to execute its constitutional role of reviewing actions taken by government officials to determine whether or not they comply with the standards laid down in the constitution, and with the laws enacted by the legislature.

*If the judicial system is right, fair and efficient then no other department is needed. The biggest tool against corruption is your legal system, your judicial system that you have to make strong (Citizen\_4).*

*If the Judiciary is strong and you are served justice there, it will tackle corruption (Donor\_2).*

*Judiciary has taken a very vital role in the society because people carried out, people struggled, through a painful efforts to restore the judiciary and judiciary is taking very good steps to take the people into confidence and providing them relief (Citizen\_1).*

Table 4.6 describes the dominant codes for the theme and subthemes of effective judiciary, which includes aspects of effective judiciary, lack of accountability and rule of law.

Theme	Sub-Themes	Codes				
		Code 1	Code 2	Code 3	Code 4	Code 5
Effective Judiciary	a. Aspects of effective judiciary	Lack of judicial dispensation	Absence of transparency	Pay the bribe and buy justice	Strong judicial system	Process of judicial reforms
	b. Lack of accountability	Process of putting a checks and balances	Lack of action against influential	Political victimisation	Mechanism to rectify corruption	
	c. Rule of law	Advocacy and awareness raising	No serious resolve	Selective in enforcing law	Interested in making new laws	

**Table 4.6: Thematic Analysis Grid — Effective Judiciary**

According to the interviewees, public confidence in the judicial system has deteriorated over time. It is perceived by some interviewees that the system patronises criminals and the local political set up and the incidents relating to higher judiciary and their internal squabbles have exposed the system to ridicule. While public confidence in the judicial system declined, the conflict between the political and judicial authorities weakened both the institutions. The following quote is a good example of interviewees' opinions:

*Judiciary has its own role to play but judiciary cannot impose itself or indulge in each and every segment. Then, what happens, there is a clash between judiciary and the government functionaries. So that should not happen (NGO\_4).*

#### **4.5.1 Aspects of Effective Judiciary**

A few interviewees emphasised that Pakistani society must be transformed from the current mindset of accepting corruption as a way of life to one of total rejection and zero tolerance. The judiciary faces greater — and at times insurmountable — problems when prosecuting perpetrators of corruption than for other types of organised or serious crimes. With regards to transparency and accountability in the government two interviewees stated:

*The system of the government for checks and balances or accountability or punishment, is weak. And it is weak because there are corrupt people sitting everywhere (Citizen\_2).*

*The government doesn't have resources and does not have transparency and accountability and we have a problem in the government that we do not put the right people in the right place (Donor\_5).*

At present, the judicial system in Pakistan is not held in high regard as stated by many interviewees. There is an abundance of laws, regulations and ordinances that are to a certain extent out of date or contradicting each other, thus giving corrupt officials good opportunities for exercising discretionary powers without any risk. This is evidenced by the following quotes from the interviews:

*[...] the Chief Justice of Pakistan admits that judiciary is corrupt and he is trying to fight corruption (Donor\_4).*

*There is a common saying, if you talk about judiciary in Pakistan; people say instead of hiring a lawyer you hire a judge (Donor\_3).*

*There is a law enforcement problem and lack of judicial dispensation in Pakistan. Chief Justice has announced national judicial policy, in which he imposed limitations that all cases must be wrapped up within one-year time. Nearly 1.5 million cases are currently in the pending log. When these 1.5 million cases are not settled it automatically makes way for corruption in the judicial system (NGO\_1).*

#### **4.5.2 Lack of Accountability**

It was stated by most of the interviewees that corruption and a lack of accountability dominate the system. Therefore, people are frustrated and turn towards other institutions in their search for justice and thus contribute to the emergence of various competing systems. It was also mentioned by the interviewees that the lack of accountability coupled with absence of transparency and political victimisation is causing a big problem in the country.

*Government sectors are seen as a place where the corruption level is high. The reason is that there is no accountability (Donor\_5).*

It was said by the interviewees that accountability is a key requirement of good governance. Interviewees stressed that not only governmental institutions but also the private sector and civil society organisations must be accountable to the public and to their institutional stakeholders. The executing agency, the National Accountability Bureau (NAB), is endowed with comprehensive powers to probe and prosecute cases. Yet, a lack of political will and the perceived co-option of the judiciary and the arbitrariness of many anti-corruption proceedings are main obstacles in the fight against corruption. An interviewee stated:

*There is National Accountability Bureau, they are trying to reduce or keep a checks on corruption but at the same time are very ineffective, because they are very focused on one direction like opposing political parties, sitting ministers or sitting army officials or even sitting judges (Donor\_3).*

*The National Accountability Bureau has been lined-up, there is some act which is in the pipeline. Then there are internal systems of proper accountability like in the Parliamentary system you have the Public Account Committee (Donor\_4).*

### **4.5.3 Rule of Law**

A key element for progress in advancing the rule of law is the leadership of key actors, both within and outside the justice system. Major sectors of Pakistan social, economic and political structure, mainly politics and governance institutions, are dominated by the elites or feudal families hindering the rule of law and democracy for the sake of their own interests. It was also mentioned by the interviewees that there is a lack of social justice and rule of law and the elites are increasing their personal wealth and are not accountable for any misconduct or misruling. The importance of the justice system and rule of law can be viewed from the following quotes:

*If the government gives the judicial system a chance to run freely, then it would bring a change (NGO\_2).*

*Strong political resolve is required to alleviate corruption (Government\_1).*

Essential components of good governance are the dominance of the rule of law, accountability, and transparency. In their absence the structure of state institutions collapses and so does public confidence, giving rise to overall hopelessness and despair. The following quote is a good example of interviewees' opinions:

*The problem is that if decisions are not taken on merit, and the rule of law is not being observed then this problem [Corruption] will persist in many areas (NGO\_2).*

*We need to have an efficient justice system, I think if you have that in your country and the judges are trained and knowledgeable and of course they are not corrupt, then you can have a very good counter-corruption system. (NGO\_6).*

## 4.6 Values

It is important to note that it is hard to compare the extent of corruption existing within a given country, such as Pakistan, to other countries since social, moral, ethical and cultural values and norms shape what the definition of “corruption” is in a country. According to the numerous respondents, the roots of this problem are to be found in the socio-cultural and political matrix of the Pakistani society which presently is faced with a gradual loss of value system and even identity. As an interviewee commented:

*The values-building institutions have vanished in Pakistan. If your environment promotes the corrupt then over the years, your values will subtly change and you will start believing that it is a good thing (NGO\_9).*

Table 4.7 describes the dominant codes for the theme and subthemes of social, ethical, religious and moral values. It was observed from the interviews that corruption has emerged as a potential risk to the stability of societies and is causing breaches in social order. It threatens our long established good values which have evolved over centuries of civilised struggle. The menace of corruption is embedded in a multitude of issues and challenges. Its roots are linked to inequality, injustice, mistrust, extremism and illegal activities. As said by the interviewee:

*I see that unfortunately people don't have the sense of responsibility and sense of realisation that what it is and how it is deteriorating the ethical and moral values of the society. So it is prevalent in Pakistan, more or less prevalent in every segment of the society, it's not just the government (NGO\_7).*

Themes	Sub-Themes	Codes				
		Code 1	Code 2	Code 3	Code 4	Code 5
Values	a. Ethical and moral values	Attitudinal change is needed	Low moral values	Moral lapse	Corruption is way of life	Motivation towards honesty
	b. Religiosity	Religious practices	Non-practicing of religion	Religious values	Religious education	Religion is not the reference point

**Table 4.7: Thematic Analysis Grid — Values**

### 4.6.1 Ethical and Moral Values

Pakistani culture is unique in terms of its social, moral and ethical values. It was stressed by many interviewees that these values are something which needs to be given due importance. These

socio-cultural values revolve around the religious teaching of equality for every human being that exists on this planet.

*Corruption stops only because of moral and ethical values (Citizen\_2).*

It was mentioned by the interviewees that low moral values can cause havoc in the society.

The level of corruption in the society ultimately depends on the ethical and moral values of that society. Over the period tolerance of corrupt behaviour has rather increased in the society and there is little evidence that people feel guilty about their own role in corruption, it has rather become a way of life. For example one of the interviewees said:

*Very low moral values in the society are an indication of degradation in the society (Citizen\_4).*

#### **4.6.2 Religiosity**

According to numerous respondents, religion plays an important role in the lives of most people, it has often been assumed that many people in Pakistan, including public officials, derive their ethical framework from their religion. This is evidenced by the following quotes from the interviews:

*Religion can play a very important role; it is a very big institution over here. Many people can be influenced through mosques. (Citizen\_7).*

*If religious values are invoked it will definitely have an impact. It should also be observed in legislation and these values must be used (NGO\_2).*

Furthermore, corruption in Pakistan, which is ethically rejected on the grounds of being against the basic principles of Islam, further damages the social fabric and erodes trust. An interviewee stated:

*[...] There can be social or religious corruption where you misuse the religion (NGO\_10).*

*If anyone turns back to Islamic values, are the more suitable values, which can be taken as social values because Islam deals with these issues perfectly and the sense of justice prevail in Islamic values and moral ethics (NGO\_7).*

It was also mentioned by the interviewees that religion inspires to the synchronisation of human thought and behaviour with a code of moral and ethical values free from the influence of personal and social life.

#### **4.7 Poverty**

The effect of corruption on the poor and on poverty reduction processes has now been reasonably extensively examined. The impact of corruption on the poor can be determined through both its direct impact, for example, increasing the cost of public services, lowering their quality and often altogether restricting poor people's access to such basic services as water, health and education

and the indirect impact through diverting public resources away from social sectors and the poor, and through limiting development, growth and poverty reduction. For example one of the interviewees stated:

*Corruption is increasing as huge funds are spent but produce no results, which is also evident from the fact that poverty has risen and income distribution has further worsened in Pakistan. (Government\_1).*

*I think limited employment opportunities and inflation, poverty and lesser salaries causes' corruption (Donor\_1).*

However, another statement by the interviewees was linked to the huge social divide within the Pakistani society and the different access to justice. A vast majority of the people lives below the poverty line and has no access to justice mainly because they simply cannot afford a lawyer. Table 4.8 shows occurrence of sub-themes and codes from the main theme of poverty.

Themes	Sub-Themes	Codes				
		Code 1	Code 2	Code 3	Code 4	Code 5
Poverty	a. Aspects of poverty	Financial intervention is needed	Direct relationship with corruption	Corruption is epidemic	Poverty is a by-product of corruption	Gap between poor and rich increases
	b. Income inequality	Unequal distribution of wealth	Capitalism motivates people to raise their income level	Increasing wage rate	Big family size and low income level	Lack of monetary compensation

**Table 4.8: Thematic Analysis Grid — Poverty**

It was stated by the interviewees that the poor are more vulnerable both in terms of being easy targets for being subjected to bribery and extortion as well as in terms of being hit by the negative and harsh consequences of corruption on the country's overall development processes. The following quote is a good example of interviewees' opinions:

*Corruption affects poor more than the rich. It affects the disadvantaged more than the privileged people (Donor\_4).*

*Level of corruption is rising. As poverty is growing, so is corruption. I think there is a very direct relationship between the two (NGO\_5).*

*Corruption always starts with poverty and disparity in the society (NGO\_6).*

#### 4.7.1 Aspects of Poverty

According to the numerous interviewees corruption contributes directly to poverty by depriving the poor of public services and benefits, by denying them social, economic, political, and legal rights and by distorting development priorities. For example one of the interviewees said:

*I will give you the example of government official if they are not going to receive salary which will sustain them through the market and they have no other means they can't do any other job so they will resort to corruption (Donor\_3).*

*In a country, like Pakistan, the biggest problem is corruption, nothing else is the problem, in fact all things emanate from it; poverty, backwardness, they all start from corruption (NGO\_9).*

Moreover, those people hardly have access to basic rights such as health and education, which is an important key for development. It would be needless to say that the ultimate victim of corruption and poverty is human self-esteem itself. An interviewee stated:

*There are thousands of poor people who are not corrupt; why are they not corrupt? They prefer to die but they don't indulge in malpractice and there are millionaires and billionaires who can do corruption for small amount. So poverty is not the root cause; poverty is a by-product of corruption (NGO\_9).*

#### **4.7.2 Income Inequality**

According to the interviewees, unequal distribution of wealth leads people to feel less constrained about being dishonest with others and about evading taxes. Where corruption is prevalent, people realise that they are not the masters of their own destiny — and they lose faith that their future will be bright. People become resigned to their fate. It can be observed from the quote from one of the interviewees:

*On the bottom of the society there is corruption, the reason is people have not enough money to meet their ends, daily ends. This is not like you know, they want to make money, it's basically they have to survive so they have to do corruption, let's take an example of police at the lowest level. But at the highest level is not the same, it's more as a practice also. That is the main reason of going for corruption (NGO\_4).*

Mainly corruption rewards the already relatively rich but some poor people are themselves engaged in corruption and thereby receive some material benefit. Due to lack of monetary compensation mostly in the public sector and officials who have many dependents, they have a strong incentive to accept bribes. In these cases, poor officials may benefit but the poor in general suffer. Another interviewee mentioned that high inequality can lead to greater incentives for corruption.

*The main reason [of corruption] in Pakistan is that the rich are extremely rich and the poor are extremely poor (Citizen\_7).*

*If you list Pakistan's top issues, corruption would be the topmost. It is one of the most corrupt countries and that is why there is unequal resource distribution (NGO\_9).*

*The main cause of corruption is the class division or the increasing segmentation. You have an elite class that has its own club and people are favoured in the clubs. Then at a lower level comes favouritism and nepotism and there are separate criteria for everything (NGO\_3).*

It was also stated by the interviewees that in the developing countries like Pakistan, which is badly affected by corruption and poverty, the fight against corruption and the fight against poverty can only be successful if and when the two phenomena are addressed on a coordinated basis.

## 4.8 Social Aspects

As said by the interviewees that it is very much possible that some corrupt practices in Pakistan are culturally acceptable due to certain traditional (informal) norms and regulations. For instance, it can be often heard that the gift-giving tradition does not constitute bribery, but simply expresses gratitude which might pave the way for a future exchange of favours. However, it is important to distinguish between the social acceptance or willingness to tolerate some forms of corruption and a rational decision to do so because it seems to be either the easiest or most beneficial option. In that respect, acceptance of corruption is not all culture-specific. As said by one of the interviewees:

*Corruption is a grave problem, people have gradually accepted the practice as part of the system. Firstly the seriousness on a government level is very little and then people have also started taking it as a social norm. This is very wrong but it is not being taken up seriously at the government level (NGO\_2).*

The interviewees mentioned that corruption has a normal exposure in many societies and people do not take it very negatively. It was also stated by the interviewees that the place where the nature or flow of money is not accessible and some people have become very rich and others remain as poor, the possibility of corruption increases there at a geometric rate.

*There is no social pressure and corruption is like I will say a way of life. It's one of the very important pillars in the society, you take out corruption I think society will come down (NGO\_4).*

It was mentioned by the interviewees that there is a basic difference in today's society compared to 50 or 60 years back. In the past, all people of a society used to know the wisest man of their society, now the trend is that all know the richest man of their society and hardly anybody knows who the most educated person among them is. This difference speaks about a moral decay of respect and honour. With regards to social image in the society two interviewees stated:

*I think corruption is getting sort of institutionalised, you can say there was a time when people were afraid of being called corrupt and their social image will be damaged but now it's not a big thing, people are not that afraid of it anymore. You can say it is sort of becoming accepted and is not taken as a stigma anymore (Donor\_2).*

*The main cause of corruption I would say that people do not want to be corrupt, it's the rate of illiteracy (Donor\_5).*

*For social values, the family social fabric is weakened; primarily poverty and too many children. Parents do not have resources to raise children as a responsible citizen and that's another area which I feel is extremely that we should, as a person we should feel that it is wrong. So the sense of right and wrong is diminishing in our society, that's another problem (NGO\_6).*

Table 4.9 illustrates social aspects of corruption in the society. As said by the interviewees, if it is deep-rooted in the society then the rich people try to make their life style easy and smooth and the others dream to attain that lifestyle by all means. This kind of social urge makes a negative motivation on all. As stated by one of the experts:

*Corruption to me is a social evil which is very deep-rooted in our society. It basically depends upon different kinds of greed that people have; Greed for social status, greed for money, but when this greed turns into lust then it is dangerous for the society overall (NGO\_3).*

Themes	Codes				
	Code 1	Code 2	Code 3	Code 4	Code 5
Social aspects	Family social fabric is weakened	Taking it as a social norm	Greed for social status	Deep rooted	Lack of education

**Table 4.9: Thematic Analysis Grid — Social Aspects**

Interviewees stressed that to stop or reduce corruption, social reform comes first. They also said that the lifestyle of a whole community should be preferably similar and the lifestyles between person to person in a society should not have much difference. A better world can be made of corruption free societies by educating people. As one of the interviewees stated:

*[...] to alleviate or to eradicate corruption from a society the society as a whole need to be educated (NGO\_10).*

## 4.9 Transparency in International Negotiations and Funding

Most of the interviewees from donor agencies mentioned that Pakistan is a major recipient of foreign aid and loans from international donor agencies, corruption in foreign funded projects has affected poverty, aid and development projects. They also stressed that aid transparency matters for many reasons – from improving governance, accountability and increasing the effectiveness of aid to lifting as many people out of poverty as possible. As an interviewee from a donor agency stated:

*Our agency is funding the government for a specific project and [...] there is corruption over there then [...] they have MOUs [Memorandum of Understanding] which has the*

*clauses of anti corruption because it has happened with them big amounts embezzlement not in Pakistan but in other countries that's why they have put clauses into their agreement with the government (Donor\_1).*

It was stated by the interviewees that anti-corruption programs promote transparency and also play a crucial role in combating corruption. By exposing whether funds from donor agencies are used for the correct purpose, aid transparency is one way of helping reduce corruption in the donor funded projects. It was stated by the interviewees that third party involvement is also important to improve aid transparency, otherwise discrepancies between aid received and aid spent are difficult to measure and corruption or simply waste is harder to track and eradicate. Table 4.10 illustrates the significance of aid transparency in international negotiations and funding.

*There is no third-party involvement in Pakistan. All the government projects in Pakistan are their own sponsoring agency, tendering agency, and procurement agency; it is only one organisation or institution. Everywhere else in the world it is seen that an institution, which is a funding agency is not the procurement agency at the same time. In Pakistan, sponsoring, tendering, procurement, monitoring and evaluation are done by the same agency (NGO\_3).*

It was stressed by interviewees that strengthening the capacity of the government will be helpful until and unless we have political will and commitment from the government which is also a key factor in the fight against corruption.

*The donor agencies can provide assistance and support and expertise [...] it is a question of political will and commitment to fight corruption. (Donor\_4).*

Themes	Codes				
	Code 1	Code 2	Code 3	Code 4	Code 5
Transparency in international negotiations and funding	Third party involvement	Anti-corruption clauses	Motivation to get capital gain	Indigenous agenda	Strengthening the capacity of the government

**Table 4.10: Thematic Analysis Grid — Transparency in International Negotiations and Funding**

## 4.10 Regulations to Create Jobs

It was said by the interviewees that due to limited employment opportunities in the public sector, the unemployment rate is a bit high. On the other hand, there are large numbers of superfluous state employees who try to create jobs and incomes for themselves by creating restrictions simply to extort money from the public. It is said by one expert, in Pakistan, political representatives seeking to increase their popularity have often offered jobs in the civil service to important client groups and usually these appointments have breached procedures and led to the appointment of less than competent people. As one expert said:

*There is limited employment opportunity and people get into recruiting their own friends and their relatives because they are in that power place and they can oblige people and so they do that (Donor\_1).*

Moreover, it was mentioned by one of the experts that the legislature creates new regulations in order to justify adding more jobs to the civil service. These new regulations provide additional opportunities for extracting bribes from the public. It was stated by the interviewees that due to political appointments in the government at some level, the right person is not placed in the right position. One expert indicated that people have no confidence in the selection process in government agencies. They are unsure whether they can be able to get a job without recommendation or political connection.

*Our organisation trained about 300 youth [...], so when we asked them to go to different organisations for a job interview, the youth were very surprised why should I go there? Because if I go by myself, nobody will listen to me because in Pakistan, there is no job available without political connection, recommendation, 'sifarish' and bribe (Citizen\_1).*

Table 4.11 illustrates important issues related to job availability. In Pakistan, due to the political interference over the civil services, it is often misused to support specific individuals in their efforts to get jobs, avoid taxes or to get government contracts, and avoid arrest for crimes. As one interviewee stated:

*[...] two major institutions one is judiciary and the other one is law and enforcement agencies. If everyone in those two institutions are hired based on the principal of the right person for the right job and the real merit was upheld in their selection. Then the likelihood is that you can expect the effectiveness of these two institutions or the independency of these two institutions will enable the society to control the corruption (NGO\_7).*

Themes	Codes				
	Code 1	Code 2	Code 3	Code 4	Code 5
Regulations to create job	Limited employment opportunities	Merit based selection	No job available without <i>Sifarish</i> [Recommendation]	Pay bribe to get job	Political connection

**Table 4.11: Thematic Analysis Grid — Regulations to Create Jobs**

It was also said by some interviewees that government officials' corruption is encouraged by low pay for civil servants. An increase in salary level/wage rate might ultimately lead to lower corruption and improved service delivery, as high salaries work as an efficiency wage if there is a reasonable probability that corruption will be detected and punished. The following quote is a good example of interviewees' opinions:

*The experience with the newly-established motorway police appears to demonstrate that sufficient pay, a well-structured job, effective monitoring and the creation of pride in the job can work wonders (NGO\_2).*

#### **4.11 Size of the Government and/or Government Expenditure**

It was mentioned by one of the experts that the relationship between the size of the government and its inefficiency, including corruption, has been an important issue in Pakistan.

*The federal government currently has around 90 ministers or people with the status of a minister. An average Pakistani was making 150 rupees [US\$ 2] a day while a minister was spending 100,000 rupees [US\$ 1,250] per day. You can put this in corruption now (NGO\_8).*

An increase in government size provides more opportunity for corrupt politicians to be involved in rent-seeking, making the politicians and bureaucrats more corrupt, as a respondent stated:

*Corruption has a direct relationship with the size of the government. Every single government on the face of the planet is corrupt, whether it is the Japanese government or Italian government or the American government. Corruption is widespread in the public arena. Now the bigger the size of the government of a country, the incidence of corruption is higher (NGO\_1).*

Table 4.12 describes important issues related to the size of the government. It was also stated by some interviewees that when individuals perceive that the levels of corruption are high in the government, they will be more reluctant to pay taxes. Moreover, due to the incidence of corruption, they will also be more reluctant to deal with government officials, since the cost of dealing with them is expected to be high. As a result, the informal sector becomes more attractive with respect to the formal sector, since operating in this sector does not require dealing with public officials and allows individuals to avoid taxes. It was advocated by one of the interviewees that reducing the size and scope of government is the only effective way to control Pakistan's corruption.

*We have not been able to control the size of the government despite our efforts of denationalisation and because we couldn't reduce the size of the government the incidence of corruption could not be decreased (NGO\_5).*

*I'd say the government is fully committed to fight the corruption to reduce the level of corruption and again the government doesn't have the capacity and resources (Donor\_5).*

Themes	Codes				
	Code 1	Code 2	Code 3	Code 4	Code 5
Size of the Government	Big government size harmful	Insufficient resources	Small size reduces corruption	Informal economy	Low tax revenue

**Table 4.12: Thematic Analysis Grid — Size of the Government**

## 4.12 Economic Health of a Country

According to the interviewees, corruption badly affects economic performance in Pakistan. Besides economic development, the interviewees identify that corruption also undermines employment opportunity, and clouds prospects for poverty reduction. In fact, interviewees support the concept that corruption and lack of economic reform go hand in hand, with causality running in both directions.

As said by the interviewees:

*I think limited employment opportunities, inflation, poverty and lesser salaries (Donor\_1).*

*The main cause is inflation, If we can control inflation we can control the basic reason of corruption, which compels people to do corruption (NGO\_3).*

It was stated by the interviewees that where corruption involves the transfer of resources outside the country, it seriously hurts economic development. It also diminishes the efficiency on which an economy depends, by increasing the cost of investment, which ultimately lowers the potential return. It also reduces the government's resources and consequently its capability for investment. As stated by one of the interviewees:

*I think government need more to do with their salary structure and I think they are trying to improve it but it is going to take some time because the government itself is poor. They do not have the funds to increase the salary unless collection of taxes you know there is whole disruption in our society (Donor\_6).*

Table 4.13 describes important issues related to the size of the government. As said by the interviewees, there is a relationship between corruption and inflation, as inflation has corrosive effects on morality and opportunities generates for deception. Moreover, tax evasion and tax collection costs are expected to be high in countries that are more corrupt.

*Inflation is one of the causes of corruption in Pakistan. Not bearing the cost of just the basic necessities, the competition between the classes, class distinction and the more ambitions (Government\_4).*

*The ground realities are that you have to live in this time of high prices and the salary does not even compare with the rising inflation (Citizen\_5).*

Other interviewees also associated corruption with the privatisation of public enterprises, in the last two decades.

*Corruption in Pakistan Steel Mills is the massive robbery in the national history (Citizen\_7).*

Themes	Codes				
	Code 1	Code 2	Code 3	Code 4	Code 5
Economic health of a country	Privatisation	Inflation causes corruption	Government is poor	Global financial crisis	Government expenditure

**Table 4.13: Thematic Analysis Grid — Economic Health of a Country**

## 4.13 Discussion

The results reinforce the literature in some cases, but also introduce some interesting perspectives on corruption from the point of view of how it is experienced day to day in Islamabad. Most of our interviewees considered that corruption was a way of life that had become a fundamental mechanism for the working of different public and private organisations in Pakistan. Another important finding was that President Zardari, himself is closely identified with the problem of endemic corruption in Pakistan. The expert interviewees, from those that worked in government agencies, donor agencies, non-governmental organisations to citizens from different walks of life, all felt that corrupt practices were embedded in Pakistani society and have harmful consequences for Pakistan. Corruption is a widespread phenomenon in Pakistani society, as mentioned in the literature review (Moreno 2002, Khan 2004 Chene 2008, Mahrwald 2009, and Transparency International 2010), and of course the results confirm this. What was notable about the findings is the hopelessness expressed by interviewees about corruption — they saw it increasing but could not see a solution.

The interviewees felt that good governance was a counter to corruption, but made the forceful point that the government needed to change in order for this to happen. Prior studies that have noted the importance of good governance to eradicate corruption from any society also suggested that if any government wants to root out corruption then their leadership must show zero tolerance and honest and visible commitment (Tanzi 1998). Most interviewees were concerned about the neutrality of the judiciary and its effect on corruption. Most political and judicial institutions in Pakistan are ruled by elites or feudal families, who hamper the rule of law and democracy for the sake of their own interests (Berg et al. 2008, Transparency International 2006, and Mahrwald 2009). One major contributor to widespread corruption in Pakistan is the disintegration of their judicial system, which has occurred because of a high level of political instability (TIP 2002, and Hashmani 2010). Interviewees perception was of corruption at all levels of the judiciary, with confidence in the subordinate judiciary particularly low. Incidence of corruption is acute in the lower judiciary, where money has to be paid at virtually every step of the judicial process in order to make it move forward or halt the process altogether.

Many interviewees perceived within corrupt practices a gradual erosion of values in their society. They keenly felt that the corruption they saw embedded in daily life was in stark contrast with Muslim values (Islam is the state religion). They felt that greed for social status and for money was gradually becoming the social norm. From the gift giving tradition, which most people felt did not constitute bribery, society had gradually accepted widespread corruption as the norm. They also identified illiteracy as a key problem – if people were educated, it was felt, there would be less acceptance of widespread corruption. Although discussions about corruption as a social problem have been part of Pakistani public life since the 1990s, initiated primarily by the media and civil society, its political significance and, consequently, policy ramifications, has been markedly strengthened since the 2000s. This is mostly due to the implementation of National Anti-Corruption Strategy, developed in 2002, which gives comprehensive powers to National Accountability Bureau (NAB) to investigate and prosecute corrupt elements.

As suggested by Saugestad (2000), corruption exists as a social, moral and cultural problem in many societies, among individuals in their personal dealings. Accepted and expected practices of gift-giving, tipping and patronage exist in most societies, even when such habits may be illegal. I would concur with the view advanced by Cobb and Gonzalez (2007) and Stulhofer et al. (2008); moral and ethical values are not sufficient when the design of the governmental system itself creates powerful and self-perpetuating incentives for corruption.

The view of corruption from the donor agency/NGO interviewees was particularly interesting, they stressed that transparency was necessary in order to improve the effectiveness of aid. They found that they needed to insert anti-corruption clauses in aid agreements. The absence of third parties in aid agreements, which meant that the funding and procurement functions were not separate, increased opportunities for corruption. There was a clear need for third party involvement such as NGOs and the private sector, and a need for separate monitoring and evaluation of projects. Prior studies have noted the importance of accountability and transparency (Berg *et al.* 2008), and the impact of increasing transparency has been observed in many countries.

Many NGO interviewees felt that the size of the government was also a problem, and asserted that the bigger the government size, the more likelihood of corruption. It was also pointed out people were unwilling to pay taxes for what they saw as a large, corrupt sector, and that this increased the informal sector.

Donor agency and NGO interviewees also felt that recruitment in the Pakistan civil service was a problem, because people did recruit their own friends and relatives, who might not be suitable for the job. These findings are in line with Hashmani (2010), who says that corrupt recruitment makes institutions ineffective. Low pay increased the temptation for corruption. The overall economic health of the nation was seen as a clear driver of corruption by many interviewees — inflation meant that wages had no purchasing power, and the government had even less resources. Privatisation was not seen to be a success in the Pakistan context. A link between

poverty and corruption has been studied widely in recent years. It is essential to note that whatever definition is used for poverty, petty and grand corruption has direct and indirect effects on poverty (Lambsdorff 1998, Price 1999, Ruud 2000, and Ullah *et al.* 2010).

The current study found that there are three main dimensions of expert perceptions of the phenomenology of corruption in Pakistan. The first was the frequently encountered disbelief in the existence of genuine political will to fight corruption. Governmental campaigns and proclamations, as well as national strategies, were often dismissed as victimisation of the political opponents in the government. In addition, anti-corruption activities and efforts were frequently perceived as misguided, i.e. focused on the low-level corruption and ignoring or carefully avoiding political corruption. Representatives of civil society were most vocal in expressing this viewpoint (Stulhofer *et al.* 2008).

Based on the qualitative data analysis, I developed a conceptual model of corruption in Chapter 5, which includes social, economic, cultural, political and judicial variables. Most importantly, qualitative data analysis also provides input as well as a foundation for a system dynamics model of corruption for this study. In summary, a thematic analysis is conducted on 30 interviews and the resulting themes are used to inform the development of a system dynamics model in the following chapter.

---

## 5 System Dynamics Modelling and Simulation

*“System dynamicists do not believe that models should be judged in a binary fashion as either ‘valid’ or ‘invalid.’ Rather, they argue that confidence in models can be generated along multiple dimensions.”*

System Dynamics and its Contribution to Economics and Economic Modelling,  
Michael J. Radzicki (2007)

This chapter describes the set of data used by the system dynamics methodology for development of the corruption model. The feature of methodology is essential for the completeness and complexity of the data used and respective information sources. As discussed in the following sections, system dynamics model uses a variety of variables and concepts from different social, economic, political, cultural and judicial constructs discussed in Chapter 4. This chapter has been organised according to the stages of model-building identified in section 3.5.1, Chapter 3: feedback process, causal loop diagrams, dynamic model-building, dynamic behaviour and analysis.

In Section 5.1, I discuss about researchers’ transition from econometric modelling to a system dynamics modelling process. Section 5.2 describes a systems map or rich picture for the modelling process (based on literature review in Chapter 2 and qualitative data analysis in Chapter 4), while Section 5.3 is concerned with a system dynamics modelling and identifies key variables in the modelling process, prepares behaviour over time graphs for these variables, and formulates the model. The last section presents the analysis and discussion that comes out from simulation results.

## 5.1 Transition from Econometric Modelling to System Dynamics Modelling

Few years ago, when the researcher was toiling as an economist, the researcher was working on corruption, income inequality and economic growth using quantitative data and hardcore econometric techniques to develop the relationship between corruption, social, economic and political factors. The researcher suggests different models of corruption with economic growth and income inequality. Following the empirics of Mauro (1995), the researcher develops and modifies the growth model of corruption. Mauro does not test whether there is a growth enhancing or growth reducing level of corruption, so one wonders whether corruption still affects growth adversely if more policy controls are added. It is apparent from the linear specification used by Mauro's study that a linear framework can only provide a partial test of the theory: only the linear effect can be captured, and the growth maximising level of corruption is forced to lie in a corner.

The econometric study empirically analyses the effects of institutional quality indicators, corruption indicators and other policy indicators on economic growth. This study empirically analyses these effects on economic growth through total factor productivity growth and determines corruption and institutional quality within the model. The dynamic feature of the model arises from the inclusion of a lagged dependent variable. The model given in Equation 5.1 attempts to capture both the growth enhancing and growth reducing effects of corruption on growth by estimating long run growth as a linear-quadratic function of corruption. For convenience in empirical analysis I specify the following relationships:

$$y_{it} = \beta_0 + \sum \beta_j X_{itj} + \sum \delta_k X_{itk} + \gamma y_{i,t-1} + \alpha \frac{K_{it}}{L_{it}} + \varepsilon_{1it} \quad 5.1$$

$\beta_j$ s are the coefficients of the conditioning variables,  $\delta_k$  are the coefficients of variables measuring corruption and institutional quality,  $\gamma$  is the coefficient of lag of GDP per worker,  $\alpha$  is the coefficient of capital-labour ratio, and finally,  $\varepsilon$  is the random error term. The above equation (5.1) includes conditioning variables and variables measuring corruption and institutional quality. These variables are government expenditure, indicator of external competitiveness, population growth rate, primary school enrollment rate, secondary school enrollment rate, foreign direct investment, risk to investment index, corruption index, bureaucratic efficiency index, political stability index, and institutional efficiency index. I attempt to capture both the growth enhancing and growth reducing effects of corruption on growth by estimating long run growth as a linear-quadratic function of corruption.  $\beta_j$ s are the coefficients of the first seven conditioning variables,  $\delta_k$  are the coefficients of eight variables measuring corruption and institutional quality, and  $\gamma$  is the coefficient of lag of GDP per worker.

According to Ullah et al. (2011, 2012), bureaucratic red tape and corruption are probably the most ancient and widespread diseases of bureaucracy. They have been observed in all

societies; there is no reason to believe that they will soon disappear. Numerous attempts to fight either of them seem to have brought only limited results. One of the problems with corruption and red tape in bureaucracy is that they cannot be treated independently. Corruption in one part of a hierarchy may stem from corruption in another part; excessive red tape may emerge due to potential corruption; bribes may be extorted because of potentially high red tape. The following model was estimated to capture the impact of bureaucratic red tape on corruption:

$$\mathbf{Corr}_{it} = \alpha_0 + \alpha_1 \mathbf{Bqua}_{it} + \alpha_2 \mathbf{Dacc}_{it} + \alpha_3 \mathbf{Lsse}_{it} + \alpha_4 \mathbf{Lpop}_{it} + \alpha_5 \mathbf{Open}_{it} + \alpha_6 \mathbf{Govt}_{it} + \alpha_7 \mathbf{Corr}_{i,t-1} + \varepsilon_{2it} \quad 5.2$$

The above equation (5.2) includes variables: Corruption index, Bureaucratic quality index, Democratic accountability index, Secondary school enrolment rate, Population, Indicator of external competitiveness, Government expenditure, Lag of corruption index, Error term.  $\alpha$ 's are the coefficients of the variables, while  $i$  and  $t$  represent the country index and the time index respectively.

In another paper, Ullah and Ahmed (2006) also examine the impact of corruption on income inequality, while including a number of control variables to minimise the omitted variable bias. These control variables include per capita income, trade openness, population growth rate, education, government expenditure, capital per-worker and past level of inequality. The following model of income inequality was tested.  $\beta$ 's are the regression parameters,  $\varepsilon$  is the random error term in equation 5.3.  $i$  and  $t$  represents the country index and the time index respectively.

$$\mathbf{Gini}_{it} = \beta_1 + \beta_2 \mathbf{Corr}_{it} + \beta_3 \mathbf{y}_{it} + \beta_4 \mathbf{Open}_{it} + \beta_5 \mathbf{Gpop}_{it} + \beta_6 \mathbf{Lsse}_{it} + \beta_7 \mathbf{Govt}_{it} + \beta_8 \mathbf{Ln}(K/L)_{it} + \beta_9 \mathbf{Gini}_{i,t-1} + \varepsilon_{3it} \quad 5.3$$

These three models of economic growth, income inequality and endogenous corruption (Equations 5.1, 5.2 and 5.3) suggest a system of simultaneous equations where corruption is endogenous and affects both economic growth and income inequality. One of the limitations with this approach is that it does not explicitly tell whether certain variables should be related, as suggested by theory. One question that needs to be asked, however, is whether a variable should be regarded as endogenous or exogenous, or what the precise mathematical relationship between the variables should be. According to Moore (1985), sometimes, "econometric models tend to include large numbers of variables with few lag terms. With models of this size, and with the comparatively short lengths of the time series which are usually available for economic variables, there is a high risk that the model will be over-parameterised". The author further explains that econometric models usually fit past data better than do time series models; whereas they often do not forecast well.

Winz and Brierley (2009) suggest that "holistic problem understanding is not possible based on quantitative data and black box modelling. A move towards integrative models will require the use of qualitative data, either on its own through qualitative modelling or in combination with quantitative simulation". Dudley (2000) argues that system dynamics modelling should offer an

ideal approach for examining corruption dynamics in any country/society because it avoids the necessity of setting up models in a purely mathematical manner. The author further suggests that initial models can be presented in a logical format for discussion with those who will have valuable input into subsequent model alteration leading to a better understanding of corruption.

A strong criticism made by many system dynamics modellers of econometric modelling is that in econometric modelling there is an implicit assumption that statistical correlation among a group of variables is seen as causality. In effect this is what modellers are doing when they produce this type of pseudo-algebraic expressions. With statistical correlation it is easy to ignore demands for dimensional consistency.

### 5.1.1 Why System Dynamics Modelling

According to Radzicki (2007), there are three principle ways that system dynamics is used for economic modelling. These three approaches are briefly discussed below.

1. The first approach involves translating an existing economic model into a system dynamics model,
2. The second method involves creating an economic model from scratch by following the rules and guidelines of the system dynamics paradigm. Many researchers like, Forrester (1961) and Richardson and Pugh (1981) give extensive details about these guidelines and rules.<sup>13</sup>
3. The third way that system dynamics can be used for economic modelling is a “hybrid” approach in which a well- known economic model is translated into a system dynamics format, critiqued, and then improved by modifying it so that it more closely adheres to the principles of system dynamics modelling. This approach attempts to blend the advantages of the first two approaches, although it is more closely related to the former.

In general, existing economic models that can be translated into a system dynamics model can be divided into four categories: a) written, b) static (mathematical), c) difference equation, and d) ordinary differential equation. Existing economic models that have been created in either a difference equation or an ordinary differential equation format can be translated into system dynamics models in a fairly straight-forward manner (Radzicki 2007). Compared with the traditional black-box econometric models, in this thesis, I try to develop a system dynamics model which shows clearer and more direct relationship between social, economic, political, cultural and judicial

---

<sup>13</sup> A number of studies have found that the former approach is valuable because it enables well-known economic models to be represented in a common format, which makes comparing and contrasting their assumptions, concepts, structures, behaviours, etc., fairly easy (Radzicki 1997, and Sterman 2000). The latter approach is valuable because it usually yields models that are more realistic and that produce results that are “counterintuitive” (Forrester 1975) and thus thought-provoking,

factors by adopting third approach discussed above which transformed economic model into system dynamics format, and then improved it further by modifying it.

As mentioned in Chapter 3, I derived the system dynamics model purely following Sterman's method. Here I also got an opportunity to translate econometric models of my previous study (Ullah 2006) into system dynamics models with some modification by adopting a third approach defined by Radzicki (2007). I opted to explain these three important variables in the current study because of the importance of these variables in the existing literature. According to many economic studies, Income inequality has been shown to be harmful to economic growth, so if corruption increases income inequality, it will also reduce economic growth and thereby aggravate poverty. The development policy community widely believes that reducing corruption would improve growth rates in less developed countries. In addition, corruption and income inequality affect each other, giving rise to the possibility of vicious and virtuous cycles.

System dynamics model is an important and promising tool for the non-governmental organisation and government policy makers to ensure effective anti-corruption measures when they are making anti-corruption policies for the country. It also has a considerable potential for elucidating corrupt systems and cures. According to Weber (2010), system dynamics stresses the importance of feedback processes, and it handles both types of data, and is therefore not restricted to quantitative simulations. Table 5.1 presents an overview of major differences between system dynamics and econometrics approaches.

Characteristics	System Dynamics	Econometrics
Perspective	System	Sub-system
Model boundary	Open but causal closed (few exogenous variables)	Open (few endogenous variables)
Focus	Structure — causality	Data — correlation
Model purpose	Behaviour modelling	Prediction modelling
Time horizon	Short, mid and long term	Short and mid term
Data	More qualitative, but quantitative also	Quantitative
Policy simulation	Policy change	Decision change
Policy evaluation	Ex-ante for change in specifications	Ex-ante for change in instruments
Functional form	Non-linear parameters and variables	Linear parameters and variables

**Table 5.1: Comparison of Econometrics and System Dynamics (Adapted from Weber 2010)**

## 5.2 A Systems Map or Rich Picture

The framework presented in this section is essentially a 'sensitising device' (Myers and Klein 1999), which provides a diagrammatic and synthesised view of the various issues discussed in the literature review (Chapter 2) and qualitative data analysis (Chapter 4). This framework serves as an initial model through which we can assess the difficulties that arise due to rampant corruption in the developing world. The rationale of this section is to discuss different components of the framework and provide an explanation of the relationships that exist between the constructs. In this research, I plan to build system dynamics model of corruption to capture the dynamics of corruption in social, economic, cultural, political, and legal systems, since the incidence of corruption itself can be seen as the macro-structure that emerges by simple interaction among individuals with particular properties at the micro level. In making the rich picture, the objective of the study is to capture, informally, the main elements, constructs and viewpoints in the situation. According to Checkland (2007), a rich picture is a better way to show relationships between different constructs; in fact it is a much better medium for that purpose than linear prose.

I am intending to use systems simulations on different social, economic, political and cultural constructs and variables. The objective of the simulation modelling would be to see how the social system of corruption develops its stable macro-state. The reason behind calling it a social system of corruption is that corruption is a social phenomenon (which involves public dealing in general) that affects all other systems in one way or another.

### 5.2.1 Economic Factors

As discussed in Chapter 2, there has been widespread literature available on the relationship between economic characteristics and corruption. As a result, there is wide agreement among researchers that economic development is directly correlated to control of corruption. Specifically, empirical studies on corruption overwhelmingly suggest that indicators like Gross Domestic Product per capita (GDP) and Gross National Income per capita (GNI) are negatively correlated to level of corruption, which at first glance might suggest that the poorer the country, the more corrupt it is. Here the assumption suggests that there are sufficient and relatively reasonably distributed resources that might help in order to sustain a society in which the incentives for corrupt activities, for instance, are suboptimal (Friedman 2000). In this study, I include only the economic variables that have displayed a robust relationship with corruption and, similar to previous works, I expect to find that there is a negative relation between level of corruption and economic development. Figure 5.1 shows the relationship between level of corruption and different economic variables.

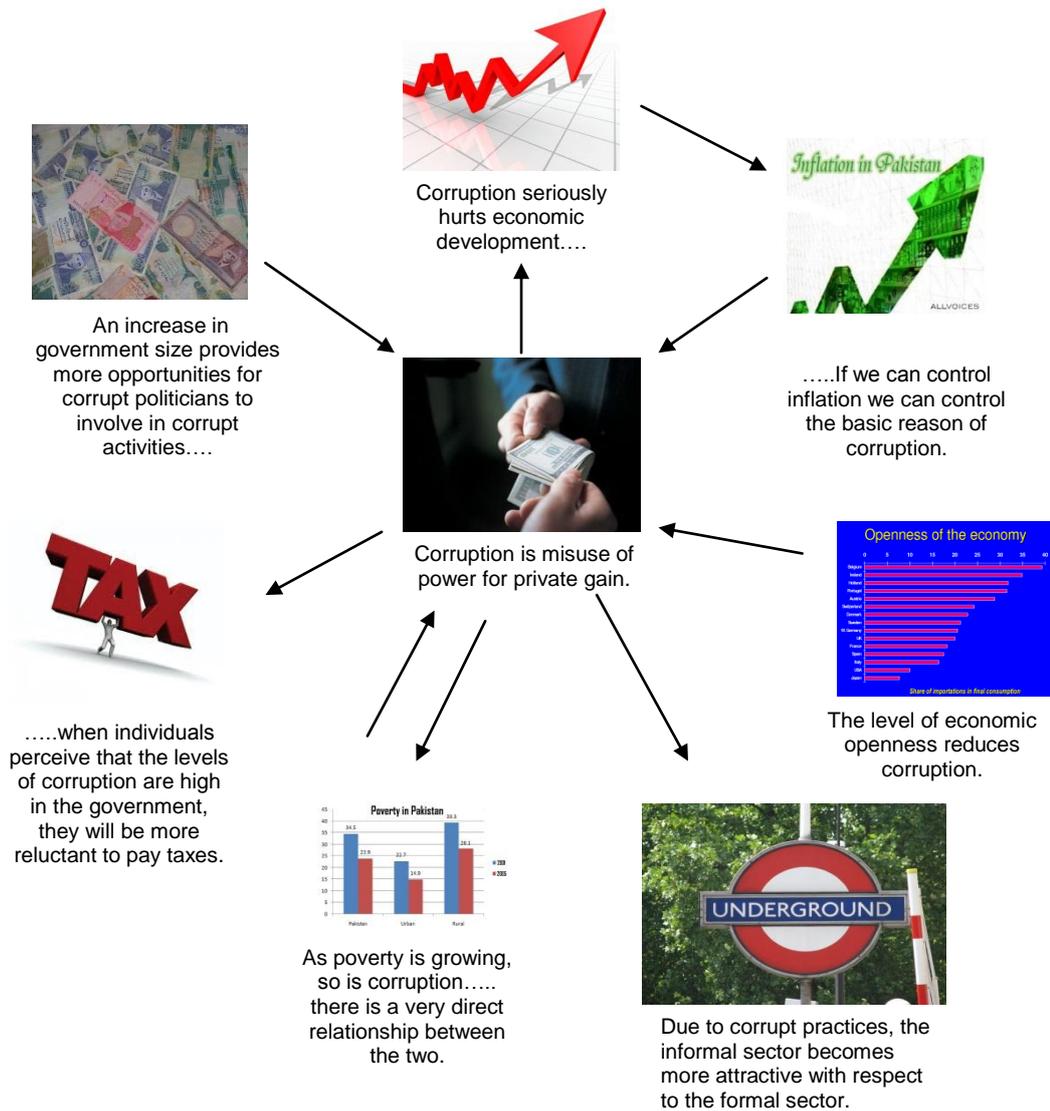
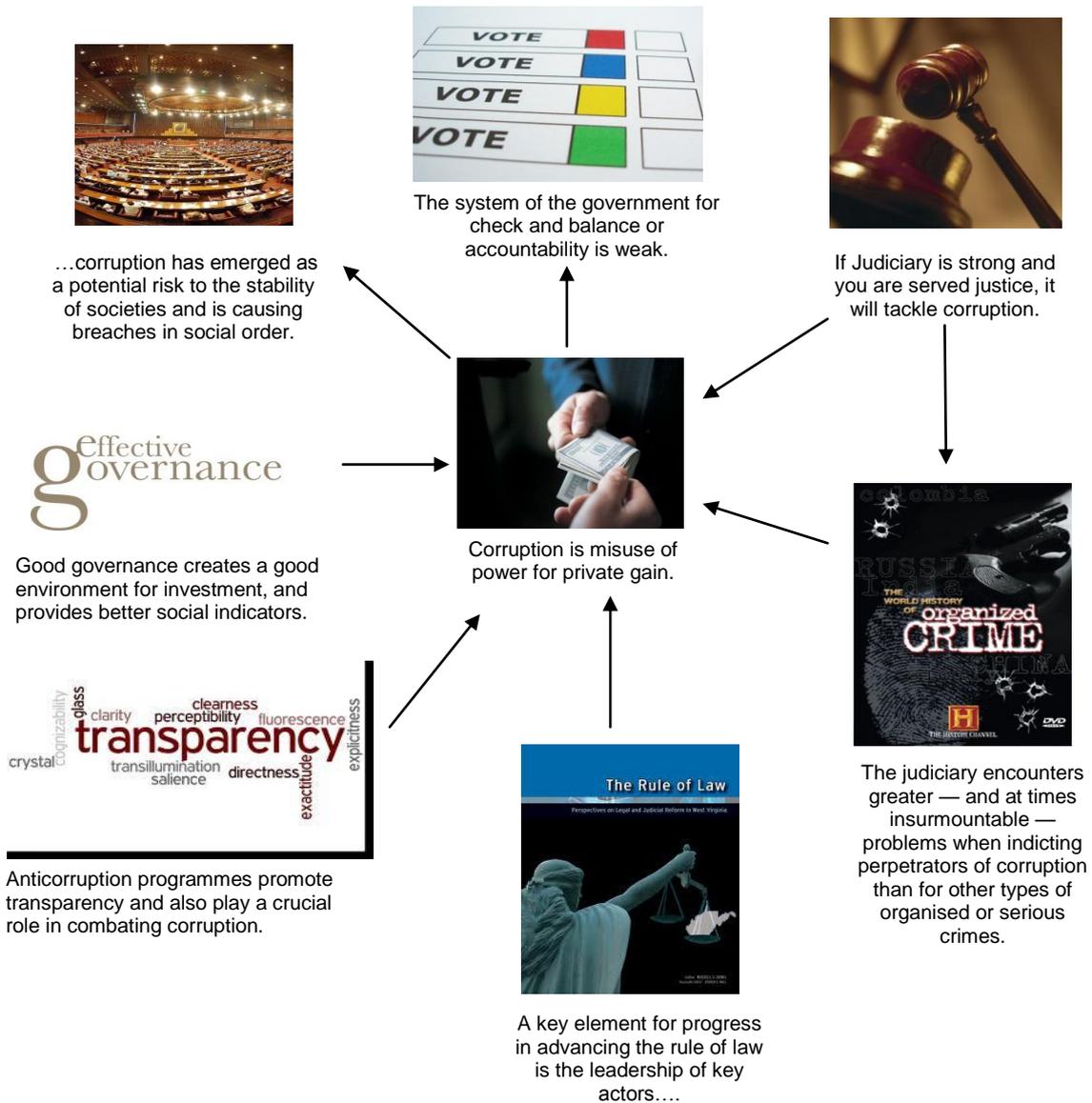


Figure 5.1: A General View of Corruption and Economic Factors

### 5.2.2 Political and Judicial Factors

Corruption has also been studied in the context of various political and judicial characteristics. Evidently, one of the most significant issues refers to the relation between good governance, democratic accountability and corruption in all its forms. Many researchers suggest that, in general, the more democratic a country is the higher the likelihood it will curb corruption (Mauro 1995, Bardhan 1997, Rose-Ackerman 1999, Treisman 2000 and Ullah 2006). This kind of relationship, some scholars explain, rests on the assumption that in such a context the rule of law prevails and that the democratic process manages to get rid of corrupt politicians through the reward and punish mechanisms related to elections. That is not to ignore, however, that corruption itself can also undermine democracy.

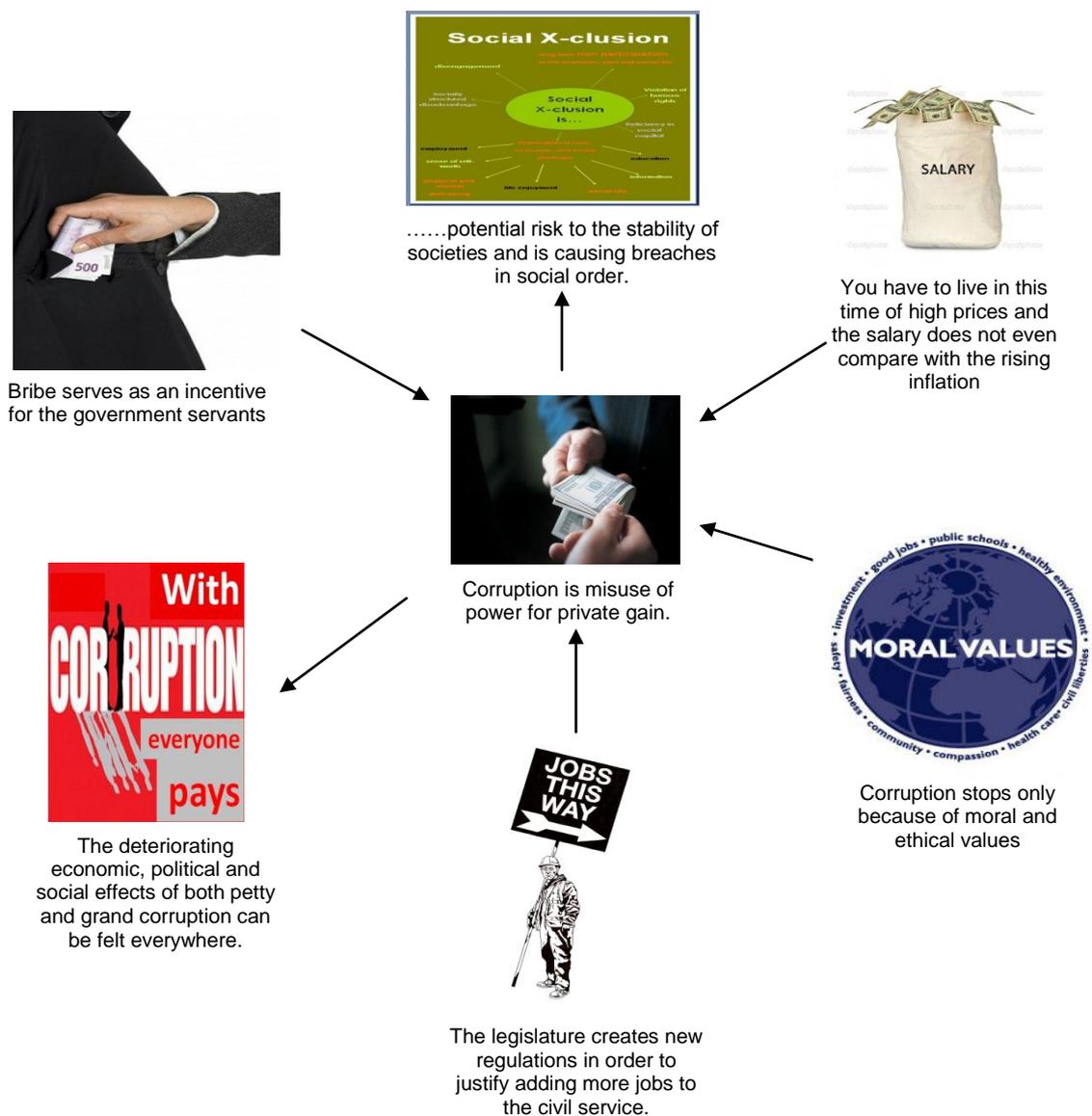


**Figure 5.2: A General View of Corruption, Political and Judicial Factors**

When the judicial system of a country becomes ineffective and compromised by corruption and incompetence, then the effects are quite serious for all levels and sectors of society. In particular, an ineffective judiciary allows increase in organised crime. Among the first signs to appear are favouritism, increased sales of illegal drugs, embezzlement, extortion, kidnapping for ransom, and gambling. An effective, independent and fairly administered judiciary can execute its role as institutional guarantor of the rule of law, assuring that wrongdoers are punished with a high degree of predictability (Silverman et al. 2009, Buscaglia et al. 2003, and Cobb and Gonzalez 2007). Some of the main characteristics of the political and judicial system are shown in Figure 5.2.

### 5.2.3 Social and Cultural Factors

The literature suggests that highly corrupt countries have high income inequality and poverty. Poverty and Income inequality do not just provide a greater supply of potential labour for criminal activities, but they also create a favourable environment for criminals to exploit the social fabric of countries as a foundation for organised crime (Lambsdorff 1999, Ali and Crain 2002, and Kaufmann and Wei 1998). Social exclusion limits citizens' access to political and economic decision-making and makes it inconsistent with pro-poor anticorruption efforts. Social exclusion badly affects the cultural and value systems in the society.



**Figure 5.3: A General View of Corruption, Social and Cultural Factors**

Control over appointments by influential people generates large quantities of untraceable cash; it is in fact the driving force behind the corruption of the government or in the society. Recent

research shows that as corruption becomes routine many other factors conspire to make it complex and self-re-enforcing; ultimately, a culture of corruption develops. Individuals who would otherwise be honest are influenced by corrupt individuals both directly and indirectly. When prospective appointees have to pay a bribe to an influential person in the government or political party for employment, then the normal process of hiring on grounds of competence is increasingly weakened. To create new jobs influential people in power can expand the size of the civil service by endorsing legislation that creates more civil service jobs. To justify this increase in jobs, influential people create new regulations which these new jobs will administer. Ultimately, every new regulation will provide additional opportunities for extracting more bribes from the public. It will also affect the economy since the increasing regulatory burden slow down the movement of businesses from the informal to the formal economy, and acts as a counter-productive tax on business (Dudley 2000, Budak 2006). Figure 5.3 presents the inter-correlations among the social, cultural factors and corruption.

### 5.3 The High-Level View

To develop the System Dynamics model, I use the interview material that describes the structure -- and the behaviour dynamics that result from that structure. While the interviews do not provide any empirical data they do provide detailed qualitative descriptions that can be represented formally in a System Dynamics model. Moreover, the literature review conducted for the present study helps in defining many of the relationships between variables. It is important to mention here that some interesting relationships have been developed from the qualitative data analysis. For example, control over appointments by influentials degrades the law and order situation in the country. The poor law and order situation in Pakistan is due to political appointments in law enforcement agencies, which in turn yield an environment where violence and criminal activities run rampant. Moreover, empirical literature on the determinants of corruption has presumed a strong relationship between corruption abatement and good governance (Treisman 2000).<sup>14</sup> But for this relationship to bear desirable results, the overriding influence of the influentials must be appropriately dealt with.

There are several feedback loops in a high-level diagram of a corruption model. The primary task in identifying the systems approach to modelling corruption is to define the key system features and to construct a high level causal loop diagram that captures the key elements of the system in question including the major feedback loops. In Figure 5.4, there are a whole range of potentially significant joint dependencies (and feedback dynamics) that capture overall system behaviour and performance over time rather than one 'dependent variable', which is different from

---

<sup>14</sup> Details about the causal relationships of the variables and their source are given in Appendix VI.

traditional social sciences. It is therefore essentially a systemic framework of analysis that provides a useful mechanism for understanding the incidence of corruption in different systems: the complex nature of change in the context of a continuing crisis of accumulation, and the impact of that change on regulated legal, economic and social institutions.

A social system occupied by increasingly complex and bureaucratic organisational structures, market-based capitalism (possibly a more accurate description would be the institutions and organisations that comprise the marketplace) requires gradually complex regulation and socio-political interference, not only to ensure increased accountability, transparency and control but, more importantly, to ensure market efficiency. Such demands, whether a product of government interference and/or market-based principles, nonetheless promote a greater dependency on systems – a trust in systems – in order that: governments ensure sufficient regulatory control of an increasingly complex marketplace is maintained, and market regulators ensure right levels of market confidence are maintained in extant regulatory procedures (Situngkir and Khanafiah 2004).

The most devastating consequences of bribery are usually not the cost of the bribes themselves, but the distortions they unleash within social, political and economic systems. For example, bribes compromise efficiency in the allocation of state resources (see Figure 5.4). Examples of this arise in awarding of government contracts or privatising state industries, as corruption favours those with connections over efficiency. Other inefficiencies can arise if officials increase regulations, delays and unnecessary requirements as a means of inducing additional payoffs. High levels of bribery increase the costs, risks and unpredictability of doing business. This work will explore this deeper understanding of corruption, its impacts in areas such as social, economic, political and cultural aspects, and its implications for the principle of the rule of law.

Almost all countries in the world have an informal economy (Cobb and Gonzalez 2007), it can be defined as that part of the total economy in the country that neither registers with the government nor pays taxes on any business transaction. Informal economies (as a per cent of the Gross National Product) range from an estimated minimum of 3% (Canada) to a maximum of 93% in countries whose national government has collapsed like Benin and Somalia (Sundquist 2008). If the size of an informal economy is greater, the tax base for sales and for corporate and individual income taxes that are withheld by employers, will be smaller. Ultimately, it causes a reduction in government revenue. To increase the tax base, government will attempt to offset this loss of revenue by (a) increasing taxes in the formal economy, or (b) increasing import duties. Either response by the government is likely to force even more businesses out of the formal economy. As a result, the amount of money available to pay salaries of government employees decreases. When a government is suffering a decrease in funds for salaries, it will either reduce the number of government sector jobs or reduce salaries. As the actual wage rate falls below the acceptable levels, government employees have even less incentive to refrain from corrupt practices, and the competent workforce begins to leave government service.



Eventually, as businesses observe that business taxes and fees are supporting a corrupt and incompetent government, they will start to leave the formal economy and move into the informal economy and those that are already in the informal economy will be hesitant to formalise their businesses. This last step closes the loop. This process describes the effect of increases in the informal economy on corruption, by the intermediary step of lower revenues for the government (Reinforcing loop  $R_a$  in Figure 5.4). These effects are self-reinforcing, meaning that once it starts it will continue to perpetuate itself.

The role of donor agencies can be seen in the high-level diagram (see Figure 5.4) of the model which deals with the constructs of international funding and transparency in international agreements. Developing countries often incur some cost in negotiations with multinational funding agencies, and in bilateral negotiations with more powerful nations. Whenever the negotiations are carried out without transparency, corruption becomes a likely factor in this poor performance. If there is a closed door negotiation between funding agency and government organisation, it offers broad prospects for secret side-agreements between participants. The effect of these agreements is that more of the economic benefits of the agreement go abroad, and fewer remain at home. This further decreases the benefits for the country, and, either directly or indirectly, diminishes the income of the government (Dudley 2000, Marcus and Kathleen 2007, 2008 and Cobb and Gonzalez 2007). As in the previous case, it will ultimately decrease total funds for government salaries, and further increase in the corruption in the government sector. It will cause a decrease in transparency in future international negotiations (Reinforcing loop  $R_b$  in Figure 5.4). In developing countries badly needed development funding is often quite small. Projects funded by international development agencies appear to provide easy targets for corruption possibly because these funds are believed to be coming 'from external sources' and are a matter of relatively small external monitoring (Vogl 1998, and Lambsdorff 1997).

The role of non-governmental organisations can be seen in the section of the model which deals with the construct of 'calls for anti-corruption measures' (Balancing loop  $B_a$  in Figure 5.4). As corruption increases, adverse effects of corruption on economic and social development are felt. This includes erosion of trust, suboptimal use of resources, insecurity and deterioration of the legal system (Stulhofer et al. 2007, 2008).

### **5.3.1 System Dynamics Modelling – Drilling Deeper**

Figure 5.4 presents the high-level diagram of the overall model of corruption (includes social, cultural, political, and economic variables). These nine feedback loops are explained in further detail to give insight into each system working in this model.

#### **5.3.1.1 Key Variables**

In this study, I am focussing on some key issues that affect economic, social, political, judicial and cultural behaviour in the society. According to Sterman (2000), in system dynamics models

variables are classified as either exogenous or endogenous variables. Table 5.2 shows the variables of the model that are endogenous, exogenous, and variables that are excluded. Exogenous variables are those that are not part of a feedback loop (in this study bureaucratic quality is exogenous), while endogenous variables are members of at least one feedback loop. A few variables are excluded from the model due to unavailability of reliable data and for the sake of simplicity; these variables could be considered for inclusion in a future work.

A causal loop diagram of the model's variables was constructed from these key variables, illustrating the major feedback processes of the corruption model in Figure 5.4. Behaviour of the corruption model is constrained by one balancing feedback and eight reinforcing loops (see Figure 5.5 and 5.6). The structure of this model contains political and judicial variables (includes, democratic accountability, government stability, law and order, organised crime, military in politics, and corruption) identified during qualitative data analysis in Chapter 4. Similarly, socio-economic variables as discussed in the previous chapter include economic openness, government expenditure, Levels of GDP, income inequality, peoples attitude against corruption, etc., have been discussed in further detail in feedback loops in Figure 5.5 and 5.6.

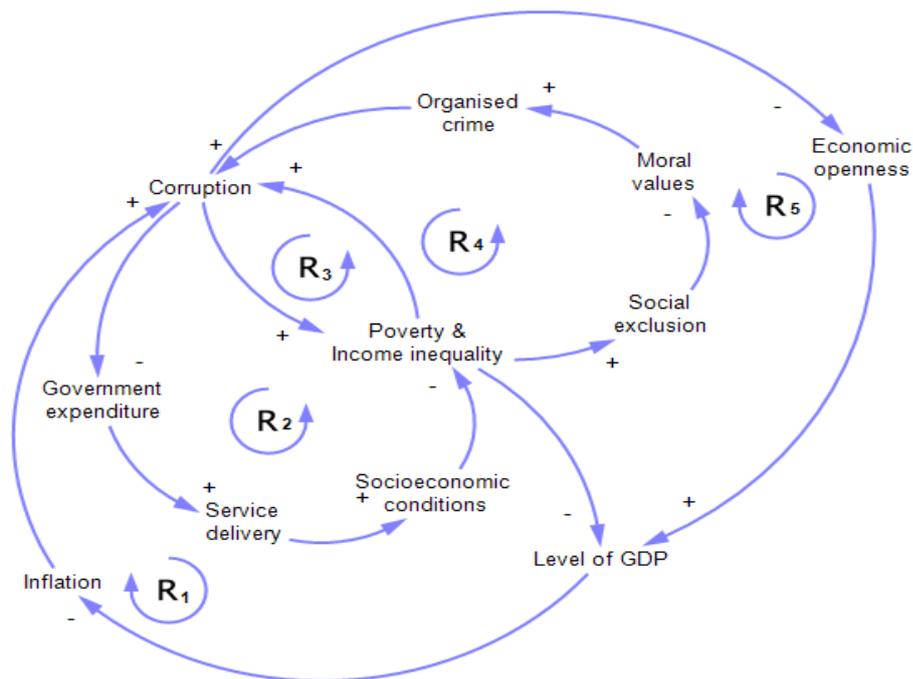
Endogenous	Exogenous	Excluded
Corruption	Bureaucratic quality	Control over appointments by influential
Democratic accountability		Governance
Economic openness		Government revenue
Government expenditure		Inappropriate recruitment
Government stability		Internal conflicts
Income inequality/Poverty		International funding/agreement
Inflation rate		Jobs in the government
Law and order		Moral values
Level of GDP		Payments to influential
Military in politics		Religious values
Organised crime		Salary level
Peoples attitude against corruption		Service delivery
Socioeconomic conditions		Social exclusion
		Transparency in international negotiations
		Trust
		Underground economy

**Table 5.2: Key Variables of the Corruption Model**

### 5.3.1.2 Feedback Loops Economic and Social Factors

Based on the literature review and qualitative data analysis, Figure 5.5 presents five reinforcing loops "R<sub>1</sub>", "R<sub>2</sub>", "R<sub>3</sub>", "R<sub>4</sub>" and "R<sub>5</sub>". The role of government can be observed in the section of the

model in feedback loop R<sub>2</sub>, which deals with the constructs of government expenditure and service delivery. Lower levels of investment result and consequently slowed growth and development, which also increases poverty levels and distorts income inequality. Bureaucratic malpractice manifest in the diversion of public funds to the areas where bribes are easiest to collect, implying a bias in the composition of government spending towards low-productivity projects (e.g. large-scale construction) at the expense of value-enhancing investments (e.g., maintenance or improvements in the quality of social infrastructure). Thus abuse of public office may not only reduce the volume of public funds available to the government, but may also lead to misallocation of those funds. It will further lower quality services provided by government (see Figure 5.5). I may also believe that organised crime can be dissipated by inculcating moral values to achieve corruption free society (Feedback loop R<sub>4</sub>). Feedback loop R<sub>5</sub> signifies the role of imports and exports (economic openness) that affect economic development positively. Moreover, R<sub>5</sub> also signifies the role of economic development in controlling high inflation rate in an economy. There is a positive correlation between inflation and corruption, as inflation causes an increase in the cost of living and thus people use illegal means to increase their earnings



**Figure 5.5: Feedback Loops of Economic and Social Factors**

### 5.3.1.3 Feedback Loops Legal and Political Factors

It can be seen from feedback loop R<sub>7</sub> (see Figure 5.6), if the law and order situation is deteriorated in the country the military might, for example, become involved in politics by toppling the regime because of an actual or created internal or external threat. This kind of situation would have

negative implications. The distortion of government policy in order to meet this threat, for example by increasing the budgetary expenditures on defence at the expense of other budget allocations, or involvement of military in politics, even at a peripheral level, is a diminution of democratic accountability (Political Risk Services 2011). However, it also has other significant implications. The risk of military take-over can force democratically elected government to change their policy or cause its replacement by another government more amenable to the military's wishes.

Moreover, a military takeover or threat of a takeover may also signify a high risk if it is an indication that the government is incompetent to function efficiently and that the country therefore has an uneasy environment for foreign investment. On the other hand, if the political leadership do not enjoy popular support, the highly elitist civilian bureaucracy might be able to reserve for itself the role of final conciliator on many policy decisions, in conjunction with the military. Feedback loop  $R_6$  indicates that widespread corruption and government instability diminish the effectiveness of accountability systems. The role of judiciary can be seen in the section of the model which deals with the construct of law and order (see Figure 5.6). Negative effects of corruption increase calls for anti-corruption measures which causes a strengthening of the legal system. In particular, an effective judiciary can fulfil its role as institutional guarantor of the rule of law. The criminal justice system deals effectively with crimes committed, in countries with low levels of organised crime (Feedback loop  $B_1$ ).

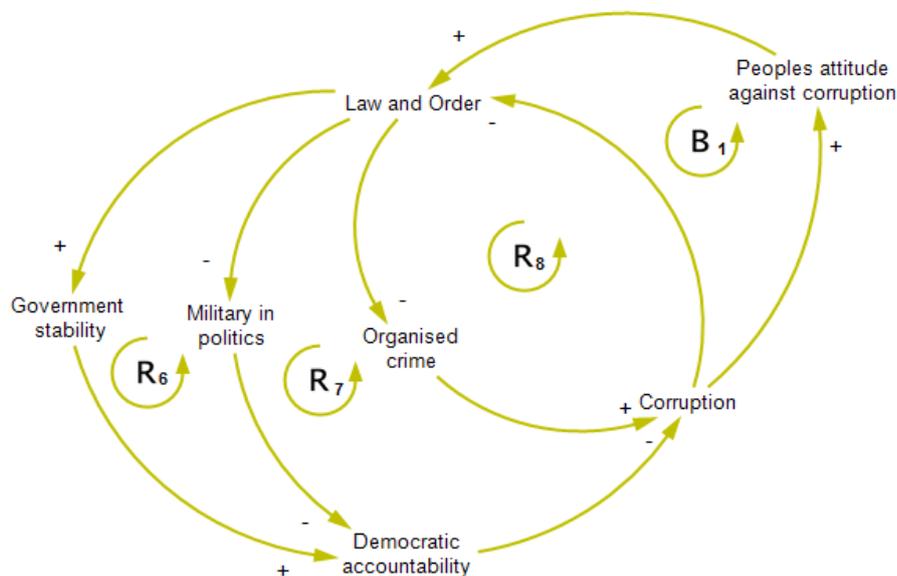


Figure 5.6: Feedback Loops of Legal and Political

### 5.3.2 Behaviour over Time

It is important to begin a CLD with a Behaviour over Time (BoT) Chart, which shows how the “issue” variable has changed over time. The anchor for the CLD technique is a behaviour chart of one or more of the key variables of the system. It need be no more than a simple sketch of how the

variable(s) have changed up to the present time. The chart forces attention on the behaviour pattern that the researcher is trying to understand and discover causes for. Further, the pattern itself reveals the nature of the dominant feedback loop that produced it.

As discussed in the previous section, in order to assess the social, political, economic and cultural issues in Pakistan, there are a number of key variables that need to be considered. Over the last 27 years, the corruption trend in Pakistan and variation in political and juridical factors can be seen in Figures 5.7 to 5.9.

Figure 5.7: Corruption Trend in Pakistan 1984-2010) (Source: Political Risk Services and Transparency International)

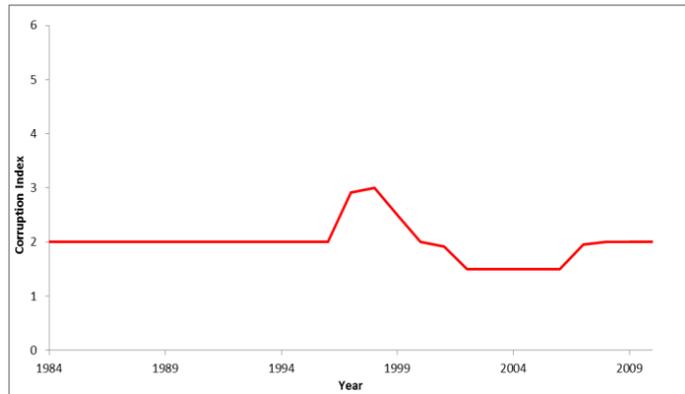


Figure 5.8: Trend of Political and Economic Risk Indices in Pakistan (Source: International Country Risk Guide, Political Risk Services)



Figure 5.9: Trend of Political Risk Indices in Pakistan (Source: International Country Risk Guide, Political Risk Services)

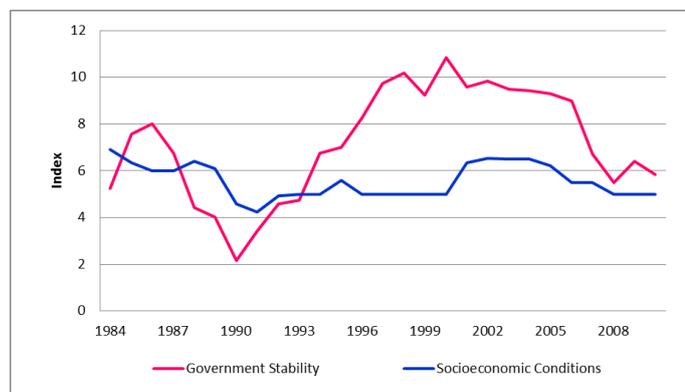


Figure 5.10: Economic Growth and Government Expenditure in Pakistan  
(Source: World Development Indicator, World Bank)

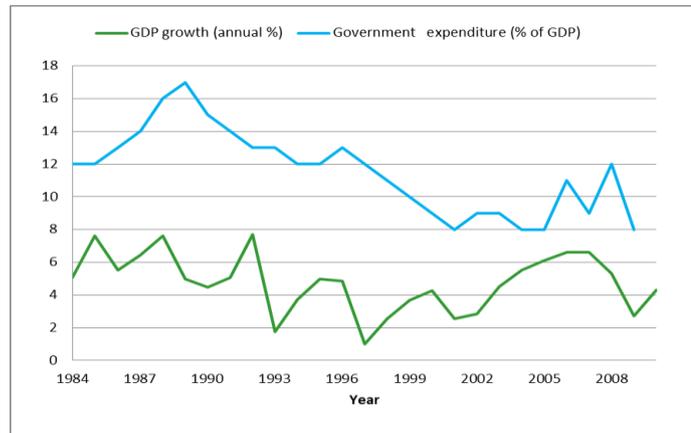


Figure 5.11: Openness of Pakistan's Economy  
(Source: World Development Indicator, World Bank)

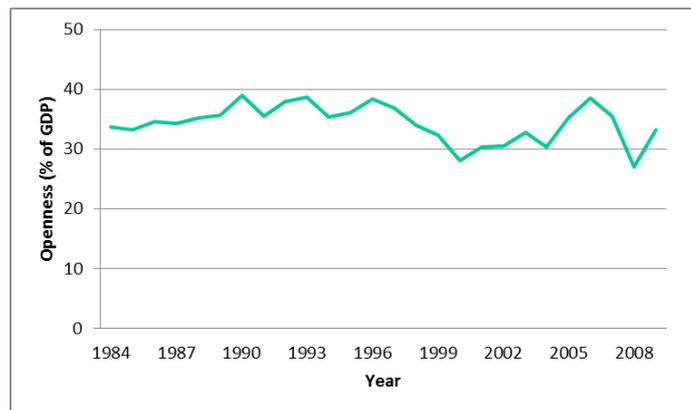


Figure 5.12: Income Inequality Trend in Pakistan (1984-2010)  
(Source: World Development Indicator, World Bank)

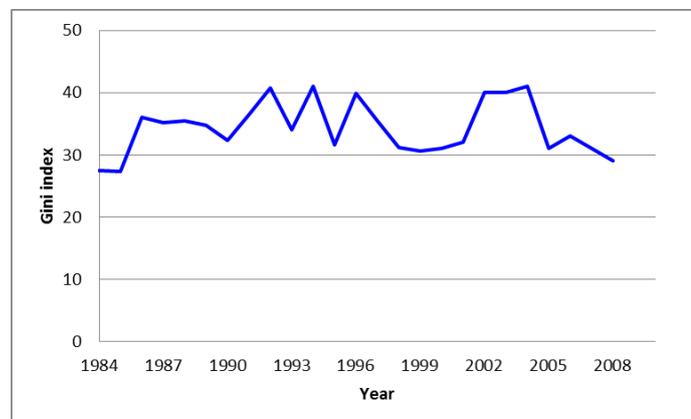


Figure 5.13: Inflation in Pakistan (1984-2010)  
(Source: World Development Indicator, World Bank)

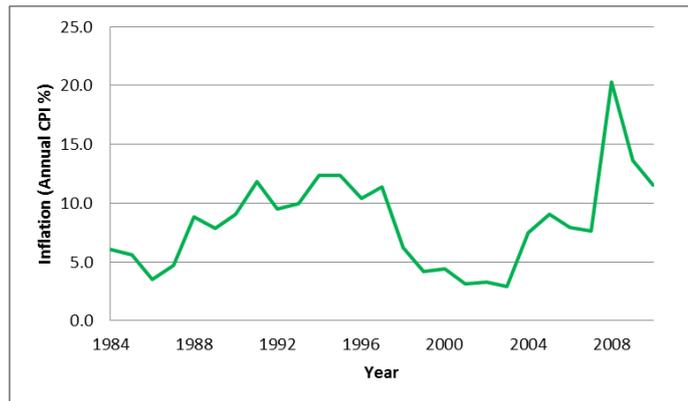
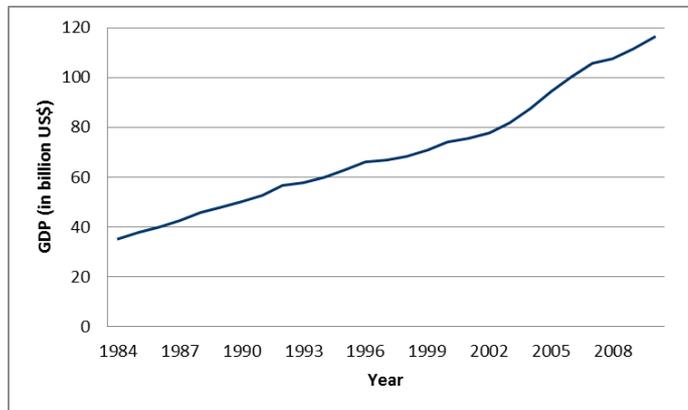


Figure 5.14: Gross Domestic Product Trend in Pakistan  
(Source: World Development Indicator, World Bank)



The growth rate of GDP and government expenditure as percentage of GDP in Pakistan from 1984-2010 can be seen in Figures 5.10 and 5.14. Trends in openness of Pakistan’s economy, income inequality and inflation can be seen over the last 27 years (1984-2010) in Pakistan in Figures 5.11 to 5.13. In the next section, I will endeavour to formulate the system dynamics model of corruption using stock and flow diagram for simulation purpose.

### 5.3.3 Formulating the Model

In the system dynamics modelling process, computational tools support the formulation of the model based on the causal loop diagrams in the previous stages. To perform a more detailed quantitative analysis, a causal loop diagram of the corruption model given in Figure 5.5 and 5.6 are transformed to a stock and flow diagram<sup>15</sup>. Moreover, it is important to perform a sort of validation

<sup>15</sup> Transformation of Causal Loop Diagram into Stock and Flow Diagram for each feedback loop is given in Appendix VII.

with historical data, since the setup of a past condition of all variables should end up with the depiction of a known state of the system in the same period (Sterman 2000).

For system dynamics modelling for this study used iThink™ software (Richmond and Peterson 1997) which supported model design in stock and flow diagram, following the same relation of the causal loop model of Figure 5.5 and Figure 5.6. The corruption model consists of thirteen stocks: Corruption (Dmnl), Democratic Accountability (Dmnl), Law and Order (Dmnl), Peoples Attitude against Corruption (Dmnl), Government Stability (Dmnl), Military in Politics (Dmnl), Government Expenditure (Per cent of GDP), Organised Crime (Dmnl), Level of Gross Domestic Product (GDP, US dollars per year), Income Inequality (Dmnl), Economic Openness (Dmnl), Inflation (per cent per year) and Socioeconomic Conditions (Dmnl). The data has been collected from different sources; for instance, Political Risk Services (PRS 2011) "International Country Risk Guide" (ICRG) and World Bank's World Development Indicators (World Bank 2011) henceforth WDI. I kept the maximum value the same as given in the original data source. That's why the range of different variables is not the same. The range of most of these stocks is from zero to 6, 10, 12 and 100. In case of ICRG indices, a higher value is the best possible for the stocks (Low risk), while zero is the worst possible value (High risk) for these stocks (see Table 5.3 and Appendix VIII).

The proxy indices proxying for corruption and various other institutional, political and judicial variables are drawn from Political Risk Services Inc., a private firm that annually publishes the International Country Risk Guide (PRS 2011). PRS sells these indices typically to banks, multinational companies, researchers and other international investors. The International Country Risk Guide (ICRG) rating comprises 22 variables in three subcategories of risk: political, financial, and economic. The ICRG staff collects political information and financial and economic data, converting these into risk points for each individual risk component on the basis of a consistent pattern of evaluation. The political risk assessments are made on the basis of subjective analysis of the available information, while the financial and economic risk assessments are made solely on the basis of objective data. Evidence for the accuracy and relevance of the indices is provided by the considerable price that PRS's clients are willing to pay in order to obtain them. Detailed PRS's definitions of these indices are reported in Appendix VIII. The income inequality data are based on a data set on the Gini coefficient, which is widely regarded as having the best income inequality measure, developed by Deininger and Squire (1996).

It is pertinent to mention here that the literature review helps in providing interrelationships between these variables. Wherever possible the qualitative descriptions have been supplemented with quantitative data to provide parameter values for the constants and initial conditions for the state variables. The relevant theoretical and empirical literature on corruption described in Chapter 2, provides the structural validity of the model as well. The model has been calibrated to represent multi-layers of historical time series data of 1984-2010, with R-square of over 70 per cent for most of the regression models, which establishes its behavioural validity. The

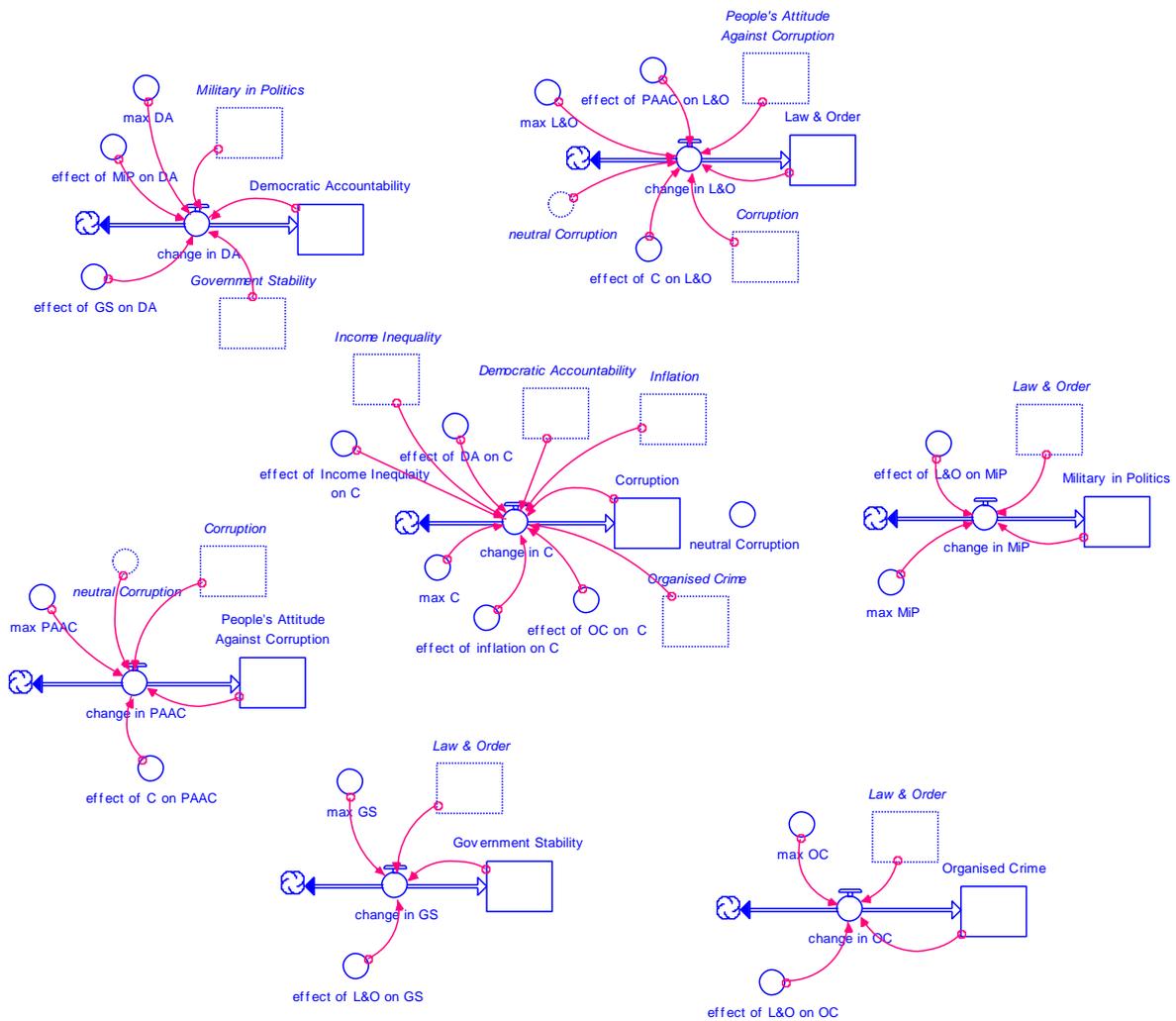
initial values of stocks in system dynamics models can be determined in a variety of ways. The values are often known or knowable and the analyst needs only to investigate available data sources to find out. In the case of the corruption model presented here, I obtained the values for the stock variables from ICRG and WDI for the year 2010 (see Table 5.3). The initial values for most of the stock parameters were obtained from the Ullah (2006: pp 71-74) study on corruption, economic growth and income inequality; for some variables I estimated the parameter using the available dataset from 1984-2010.

Variables	Stock Value	Unit of Measurement	Minimum Value	Maximum Value
Democratic accountability	1.00	Dimensionless	0	6
Economic openness	3.70	Dimensionless	0	100
Government expenditure	12.00	Per cent of GDP	0	100
Government stability	5.25	Dimensionless	0	12
Level of Gross Domestic Product	35.24	Billion US dollars per year	35.2	116.3
Income inequality/Poverty	34.50	Dimensionless	0	100
Inflation rate	6.09	Per cent per year	2.9	20.3
Law and order	2.00	Dimensionless	0	6
Corruption	1.00	Dimensionless	0	6
Military in politics	1.00	Dimensionless	0	6
Organised crime	84.00	Dimensionless	0	100
Peoples attitude against corruption	5.00	Dimensionless	0	10
Socioeconomic conditions	6.92	Dimensionless	0	12

**Table 5.3: Model Initial, Minimum, Maximum Values and Variable Dimensions**

According to Qureshi (2009), the system dynamics models are causal models and these models should generate the right behaviour for right reasons. The general direction of these functions is based on corruption literature and interviews from experts for this study. Time constants for the flows are constant per year for the simulation. It is likely that democratic accountability not only affects corruption directly by removing corrupt persons, but also operates via a variable fear of being detected and punished. This fear could change more rapidly than the legal system itself. This might happen, for example, via the prosecution of corrupt politicians and high level bureaucrats where convictions would have high public visibility (Klitgaard 1988 and

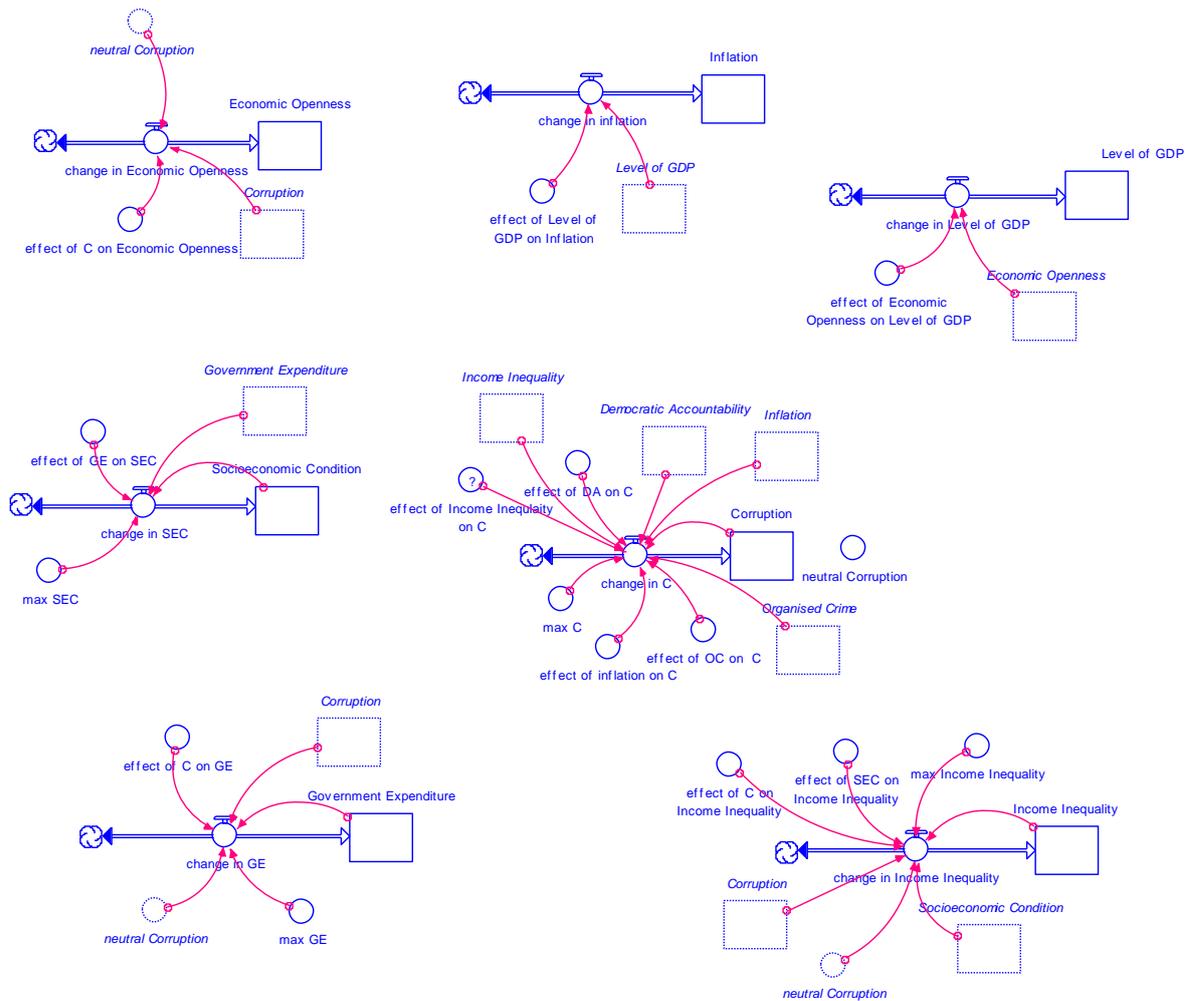
Dudley 2000). Figures 5.15 and 5.16 present the interrelations among the 13 stock variables measuring social, economic, political, judicial and cultural factors collectively<sup>16</sup>. It is also suggested in the literature that as corruption grew, law and order situation deteriorated. Moreover, corruption of public officials, including law enforcement like police department and judiciary, is a common characteristic of organised crime that allows criminal organisations to secure survival and minimise the risk of being arrested and prosecuted.



**Figure 5.15: Stock and Flow Diagram of Corruption Model with Political and Judicial Factors<sup>17</sup>**

<sup>16</sup> A ghost function has been used in Figures 5.15 and 5.16. A Ghost of an entity has no independent identity - it is simply an image of the building block from which it was ghosted. The ghosted replica has no equation of its own. In particular, ghosted stocks can have no inflows or outflows; ghosted flows. Ghosts serve the primary role of keeping a diagram tidy. When connectors might otherwise run all over the screen, leading to diagram "spaghetti," ghosted images can help to keep the connections neat and clean (Richmond and Peterson 1997).

<sup>17</sup> DA=Democratic Accountability, GS=Government Stability, C=Corruption, L&O=Law and Order, MIP=Military in Politics, and PAAC=Peoples Attitude against Corruption.



**Figure 5.16: Stock and Flow Diagram of Corruption Model with Social and Economic Factors<sup>18</sup>**

The so-called “Reference Mode” depicts the dynamic behaviour pattern of variables of interest over time which illustrates how these have evolved and how these might develop given the continuity of current trends (Qureshi 2009). Results from the base case scenario, in which political, judicial, social and economic factors which affect the corruption level, level of GDP and income inequality in the country positively or negatively, are shown in Figure 5.17. The focus of these simulations is to analyse the impact of different anti-corruption measures on different indicators of interest. To reproduce reference mode behaviour (base case), involves putting in provisional values for the parameters at first to try and reproduce the general pattern of the reference mode. As discussed earlier, more accurate and detailed parameter values are obtained later and these are inserted into the model. The reference mode is reproduced in Figure 5.17 — this is generally called the base case.

<sup>18</sup> GE=Government Expenditure, C=Corruption, and SEC=Social and Economic Conditions.

The model assumes that an improvement in income inequality will subsequently decrease the corruption level (corruption index will improve) in the economy as shown in Feedback loop  $R_3$  in Figure 5.5. It seems realistic to assume that if corruption increases then income inequality in the economy deteriorates. As discussed in Chapter 2, income inequality has a detrimental effect on economic growth (Level of GDP). Since corruption increases income inequality, it causes diminution in economic growth too. The model also assumes that economic openness improves economic growth (Level of GDP), as some researchers stated that opening up of economies to international trade is generally viewed as an effective strategy for accelerating Level of GDP (see Feedback loop  $R_5$  in Figure 5.5).

In order to avoid sharp variations of the corruption index, which would be justified by the evidences, the index is modelled by means of a level variable, dimensionless, with an explicit aim to attain the current value as we got in our behaviour over time (BoT) diagram. In addition, its evolution has to keep certain characteristics in order to correctly quantify the degree of corruption in the economy, and likewise, to reflect other evidence (see Figure 5.17).

Firstly, its range of variation is selected to be from zero to six and like the ICRG corruption index, the more the index is, the lesser corruption is. In particular, if the index reaches the maximum value, the economy will not have corruption; but the index cannot be null, because in that case, the whole society will be corrupt, which is not a realistic fact.

Secondly, different evidences justify that corruption could be led by a feedback process, particularly, if the corruption is high due to the perceptions that individuals have to act corruptly.

Thirdly, its variations have to depend on the current level of corruption.



**Figure 5.17: Reference Mode for Corruption, Level of GDP and Income Inequality**

As described in the stock and flow diagram in Figures 5.15 and 5.16, if the economy suffers from corruption activities, the foreign investment process will imply a bribes payment.

Corruption reduces the level of foreign direct investment and, consequently, it will affect the level of GDP. It can be seen from Figure 5.18 that an improvement in the corruption index (decrease in Corruption) by 0.4 points would help in increasing the level of GDP (Line 1 in Figure 5.18). Similarly, if there is deterioration in the corruption index by 0.4 points (increase in corruption) it would cause decline in the level of GDP in the country. An increase in corruption increases the complexity of the feedback structure of the economic system since they add new causal relationships connected to those affected by unequal distribution of resources and going into the poverty trap. The whole feedback structure can fully explain why the corruption activities influence the socioeconomic conditions in the country as well as the wealth of citizens (Soto-Torres et al. 2007). It is pertinent to mention here that I had to use a 'neutral' level of corruption because (a) I believe that a certain level of corruption always exists, and (2) the level of corruption is subject to balancing effects as well, so a 'non-zero' neutral level can facilitate the balancing dynamics better (accommodating both increases and decreases).



**Figure 5.18: Effect of Corruption on Level of GDP**

Next section develops five future scenarios in case of policy variables i.e., Corruption, Level of GDP and Income Inequality and assesses the outcomes. The behaviour of these variables are assessed changing the parameter value by 10, 5, 0, -5, and -10 per cent over the next 15 years (2011-2025). Additionally, the following section comments on the assumptions related to data fed into the model during forecasting. The system dynamics model also used iThink™ for scenario planning. The equations of the complete model including the values corresponding to the base case and documentation can be found at Appendix IX. Some important iThink equations for the simulation model, developed from the stock flow diagram in Figures 5.15 and 5.16, are presented in Table 5.4.

<b>Equations for the Corruption Model</b>
$\text{Corruption}(t) = \text{Corruption}(t - dt) + (\text{change\_in\_C}) * dt$
INIT Corruption = 2
INFLOWS:
$\text{change\_in\_C} = \min((\text{max\_C} - \text{Corruption}), (\text{Democratic\_Accountability} * \text{effect\_of\_DA\_on\_C}) + (\text{effect\_of\_OC\_on\_C} * \text{Organised\_Crime}) + (\text{Inflation} * \text{effect\_of\_inflation\_on\_LoC}) + (\text{Income\_Inequality} * \text{effect\_of\_Income\_Inequality\_on\_C}))$
$\text{Income\_Inequality}(t) = \text{Income\_Inequality}(t - dt) + (\text{change\_in\_Income\_Inequality}) * dt$
INIT Income_Inequality = 34.50
$\text{change\_in\_Income\_Inequality} = \min((\text{max\_Income\_Inequality} - \text{Income\_Inequality}), (\text{effect\_of\_SEC\_on\_Income\_Inequality} * \text{Socioeconomic\_Condition}) + (\text{Corruption} - \text{neutral\_Corruption}) * \text{effect\_of\_C\_on\_Income\_Inequality})$
$\text{Level\_of\_GDP}(t) = \text{Level\_of\_GDP}(t - dt) + (\text{change\_in\_Level\_of\_GDP}) * dt$
INIT Level_of_GDP = 35.24
$\text{change\_in\_Level\_of\_GDP} = (\text{Economic\_Openness} * \text{effect\_of\_Economic\_Openness\_on\_Economic\_growth})$
$\text{People's\_Attitude\_Against\_Corruption}(t) = \text{People's\_Attitude\_Against\_Corruption}(t - dt) + (\text{change\_in\_PAAC}) * dt$
INIT People's_Attitude_Against_Corruption = 5
INFLOWS:
$\text{change\_in\_PAAC} = \min((\text{max\_PAAC} - \text{People's\_Attitude\_Against\_Corruption}), (\text{Corruption} - \text{neutral\_Corruption}) * \text{effect\_of\_C\_on\_PAAC})$
effect_of_C_on_Income_Inequality = -0.02
effect_of_C_on_PAAC = -0.106
effect_of_DA_on_C = 0.065
effect_of_Economic_Openness_on_Level_of_GDP = 0.0723
effect_of_OC_on_Corruption = -0.002
effect_of_PAAC_on_L&O = 0.015
effect_of_SEC_on_Income_Inequality = -0.002
max_C = 6
max_Income_Inequality = 100
max_PAAC = 10
neutral_Corruption = 4

**Table 5.4: Equations for the Simulation Model**

In Figures 5.15 and 5.16, corruption is modelled as a stock. This stock is represented by the following equations given in Table 5.4:

$$\text{Corruption}(t) = \text{Corruption}(t - dt) + (\text{change\_in\_C}) * dt$$

$$\text{INIT Corruption} = 2$$

The first equation states that corruption at the present time (i.e. 't') is equal to the corruption at the previous time (i.e. t – dt), plus the change in corruption that occurred during the period (i.e. dt) since the corruption level was previously calculated. The second equation indicates that the initial value of corruption was 2 at the beginning of the simulation. Dimensions (units of measurement) are provided here for each variable in the brackets at the end of each equation.

Moreover, flow equations are generally the policy statements in the system. They reflect the rate at which the system will change during the forthcoming simulation interval of time (An example of a flow equation from the corruption model is given in Table 5.4).

### 5.3.4 Result for Simulation

The dynamic behaviour of the corruption model can be studied through simulations by varying the parameters of the model. First the model needs to be placed in equilibrium (see Appendix X). At the equilibrium, the model does not generate any dynamic behaviour, i.e. nothing changes over time, and it lies at equilibrium unless otherwise disturbed. The focus of these simulations is to analyse the impact of different policies on different indicators of interest.

As I initialised the model, I simulate the model with reference mode which reflects the status quo (Figure 5.17). Stocks will approach their highest or lowest value if one or more of the stock parameter is pushed up or down (see Table 5.4 for some of the parameter values), although the rapidity of that change is dependent on the extent of the push.<sup>19</sup> In other words, when change the value of stock parameters the model approaches either a very corrupt system or a very clean system (Figure 5.19). This is the most important stage of the modelling process (Maani and Cavana 2007). At this point, scenario planning is done and the results are drawn from the model. This provides extraordinary guidance to anti-corruption policy for the government, since the outcome can influence their decision-making process towards focussing on important factors to target corrupt activities. This thesis tests the results of the model in the following combination of scenarios: at the different scenarios focus on changes in variables affecting level of corruption, level of GDP and income inequality. The system dynamics model enables the projection of several different scenarios. As mentioned earlier, the time horizon is selected equal to 15 years (2011-2025) which is a period sufficiently long for showing how corruption is affected by change in some important variables like democratic accountability, income inequality in the country, inflation rate, and organised crime as well as for verifying the necessity to fight against corruption.

Overall, the results show that under the defined circumstances, corruption climbs eventually, with the poor judicial system. Social economic conditions deteriorate as a result of corruption, which worsens income inequality (Balancing loop  $B_b$  in Figure 5.4). As corruption increases, people's attitude against corruption goes up. Along with NGO's involvement, the people are applying pressure to lower the level of corruption through various means (Balancing loop  $B_c$  in Figure 5.4). As a result, the level of corruption is controlled, which in turn improves the effectiveness of the judicial system, which reinforces the reduction in the level of corruption, thus, the betterment of social economical conditions. With such improvements, income inequality is reduced, and we can see that the people's attitude against corruption is also reduced. Given some changes in the 'effect' converters, and a longer simulation period, we may see an increase in corruption again sometime in the future. Since attitudes towards corruption play a critical role in the persistence of corruption — if people's attitude against corruption went high then the corruption

---

<sup>19</sup> The traditional and frequently used form of sensitivity analysis has been to vary model parameters and to observe how behaviour changes. This is a very useful procedure for model testing, learning, and validation.

would be decreased over time. According to Cameron et al. (2005), peoples' attitudes towards corruption are shaped by the social, political, legal and economic systems of the countries they live in as well as their everyday experiences of corruption.

Figure 5.20 depicts five different scenarios that yield highest to lowest level of GDP wherein policies that improve economic openness increased the level of GDP in the economy. This finding indicates Pakistan's economic potential, if it could improve socioeconomic conditions and the political and security situation in the country for the foreign investors. Even though an increase in its GDP may be a better alternative. A comparison of scenario 5 with reference mode (Scenario 3) suggests that Pakistan can achieve a low level of inflation even if it experienced an increased level of GDP. Further, levels of GDP remain quite low (Scenario 1 and 2) if a country's import and export remains low due to a high level of corruption.

The results, as shown in Figure 5.21, indicate that in scenario 1 and 2 decreases are due to improvement in the corruption index and socioeconomic conditions over the next 15 years (2011-2025). A comparison of scenario 3 with reference mode suggests that Pakistan can achieve better income distribution (improvement in income inequality measure) even if decreased level of corruption is resulted from very low improvement in socioeconomic conditions in the country. If we look into scenario 4 and 5, where income inequality is increasing at a rapid rate, it is caused by a high level of corruption and deteriorating socioeconomic conditions due to political instability and a lack of accountability.

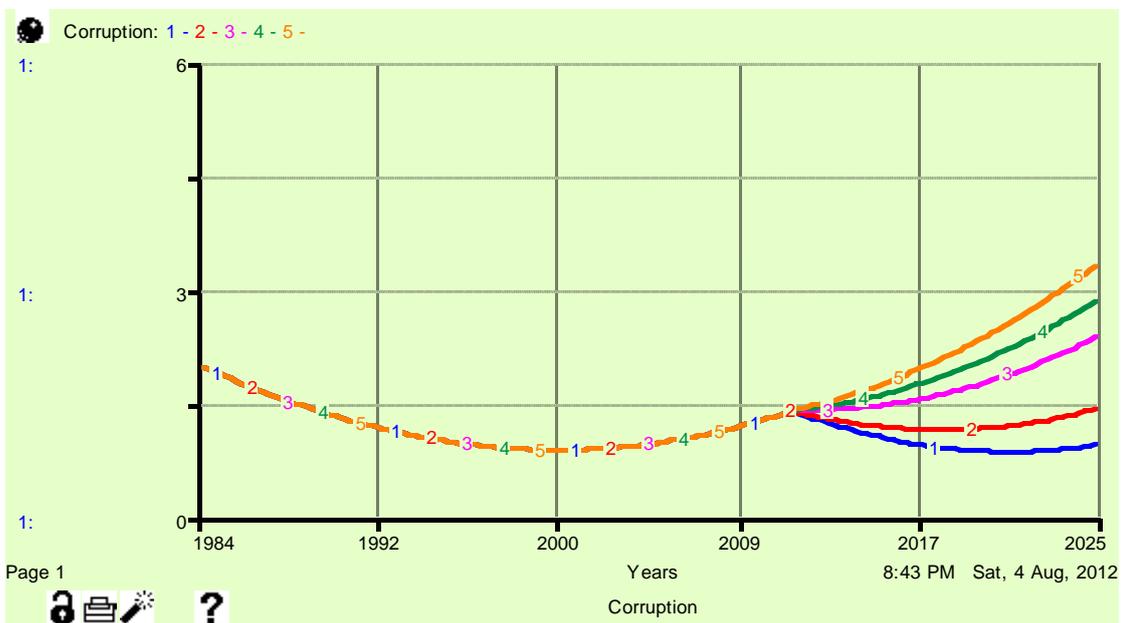


Figure 5.19: Level of Corruption (Measure of Improvement in Governance)<sup>20</sup>

<sup>20</sup> Level of Corruption: Lines 1, 2, 3, 4, and 5 represent -10, -5, 0, 5 and 10 per cent change in corruption index.



Figure 5.20: Level of Gross Domestic Product (Measure of Economic Wellbeing)<sup>21</sup>

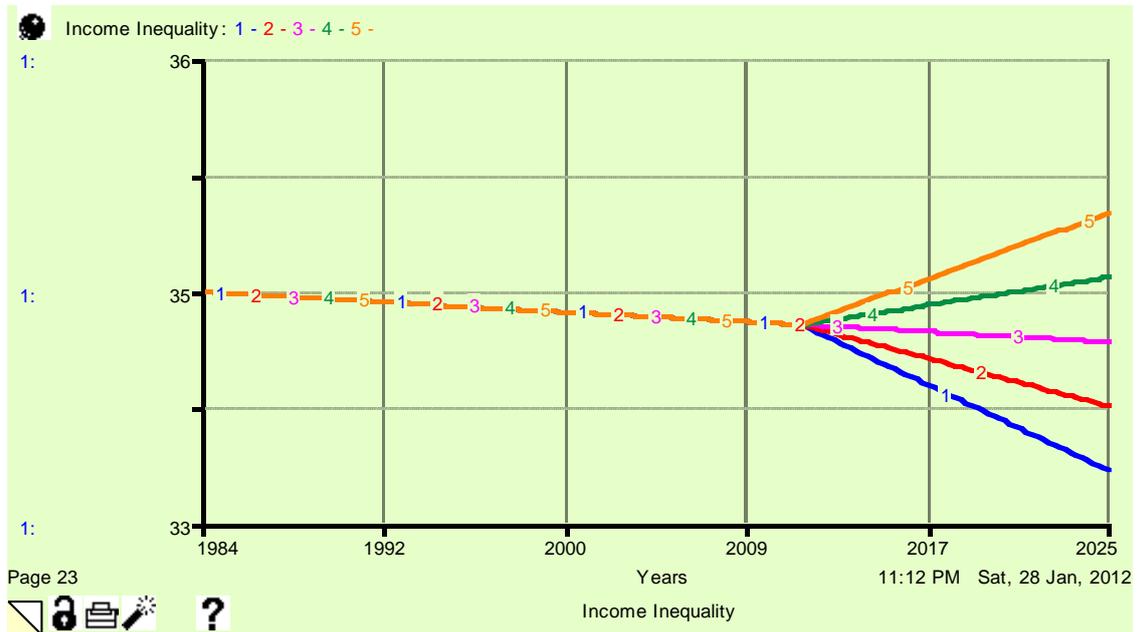


Figure 5.21: Income Inequality (Measure of Social Wellbeing)<sup>22</sup>

<sup>21</sup> Level of Gross Domestic Product: Lines 1, 2, 3, 4, and 5 represent -10, -5, 0, 5 and 10 per cent change in GDP level.

<sup>22</sup> Income Inequality: Lines 1, 2, 3, 4, and 5 represents -10, -5, 0, 5 and 10 per cent change in Gini index.

### 5.3.4.1 Model Validation

According to Maani and Cavana (2007), the ultimate objective of system dynamics model validation is to establish the validity of the structure of the model. Accuracy of the model behaviour's reproduction of real behaviour is also evaluated, but this is meaningful only if we already have sufficient confidence in the structure of the model. Thus, the general logical order of validation is, first to test the validity of the structure, and then start testing the behaviour accuracy, only after the structure of the model is perceived adequate. In the simulation model, the base case of the corruption model was subjected to a range of the validation tests suggested by Forrester and Senge (1980), as given in Table 5.5.

<b>Tests of model structure</b>	
Structure verification	Is the model structure comparable with the structure of the real system that the model represents?
Parameter verification	Do the model parameters (constants) correspond conceptually and numerically to the real system?
Extreme conditions	Are the rate (policy) equations plausible if imaginary maximum and minimum values of each state (stock) variable (or combination of state variables) on which they depend are inserted into the model?
Boundary adequacy	Is the level of model aggregation appropriate and does the model include all relevant structures?
Dimensional consistency	Are the rate equations dimensionally consistent and do they include 'scaling' parameters that have little or no real life meaning?
<b>Tests of model behaviour</b>	
Behaviour reproduction	How well does model-generated behaviour match observed behaviour of the real system?
<b>Tests of policy implications</b>	
Changed behaviour prediction	Does the model correctly predict how the behaviour of the system will change if a governing policy changes?

**Table 5.5: Test for Validity of SD Model (Forrester and Senge 1980)**

The corruption model has been subjected to a series of tests, which are briefly summarised below:

- a) The causal loop diagram must correspond to the statement of the problem:  
The causal loop diagram for the corruption model provided in Figure 5.5 and 5.6 does correspond to the problem statement outlined in the Section 5.2 of this Chapter and illustrated in the behaviour over time (BOT) diagrams in Figure 5.7 to 5.14. Confirmation that the causal loop diagram does correspond to the problem statement is also reinforced by the qualitative analysis of the feedback loops in the feedback loops section.
- b) The equations must correspond to the causal loop diagram; in particular the '+' and '-' signs in the equations must match the signs in the causal loop diagram:  
A close inspection of the model equations contained in the model formulation section revealed that the direction of the relationships in the causal loop diagram (see Figures 5.5

and 5.6) matched the direction of relationships in the simulation model in iThink™. However, it must be mentioned that the stock and flow diagram contains less variables than the causal loop diagrams (see Figures 5.15 and 5.16), which form the basis for the detailed model equations.

- c) The model is dimensionally consistent without the use of parameters that have no real world meaning:

It may not be usual to base a model almost entirely with indices rather than actual values, but this should not be a problem as the corruption model behaves in a reliable fashion. (Figure 5.17)

- d) Are the rate equations plausible if imaginary maximum/minimum values of stock variable (or combination of stock variables) on which they depend are inserted into the model?

Numerous extreme condition tests were conducted and equations are sensible at extreme values. For example, when the parameter values of level of GDP, income inequality, and corruption were set to zero, the model became completely static. (Appendix X)

- e) How well does model-generated behaviour match observed behaviour of the real system?

An exact matching between real data and model data points is not required for model validity (see Appendix XI), because a System Dynamics model is not designed to include the internal and external details and random factors that are needed in short term forecasting (Maani and Cavana 2007). Moreover, the model endogenously approximated the hypothesised behaviour of the system under normal and extreme conditions. The assumed reference mode behaviour was reproduced given the current model structure.

## 5.4 System Dynamics Model: Analysis and Discussion

The present study was designed to determine the effect of corruption on Pakistan's social, economic, cultural, political and judicial factors over the period of 1984-2010, as discussed in behaviour over time diagrams and stock and flow diagrams. Moreover, this study produced results which corroborate the findings of a great deal of the previous work in this field (Dudley 2000 and Soto-Torres et al. 2007). As mentioned in the literature review, the reason for widespread corruption in Pakistan is the disintegration of their judicial system, which occurred because of a high level of political instability (Diamond 1993).

During the Zia regime from 1977-1988, economic growth revived to the trend level of the 1960s in Pakistan (Diamond 1994 and Khan 2006). There were two main reasons for growth revival during the period. First, the level of corruption was somewhat low in the country. Secondly, this regime faced an exceptionally favourable exogenous environment on two fronts: (a) because of the Soviet invasion in Afghanistan Pakistan once again became a recipient of large doses of US and international aid. (b) Remittances from overseas Pakistanis helped finance roughly half of the trade gap during the period (Hussain 2008). Moreover, it is interesting to note that both poverty and income inequality during the period reduced. Favourable developments in the Zia years proved not

to be sustainable. Exogenous windfalls that sustained the regime dried up at around the same time as General Zia disappeared from the political scene because of an air crash.

During the 1990's, power over Pakistan was continually being changed between Benazir Bhutto and Nawaz Sharif. Much violence erupted during this time period and the police force became increasingly corrupt (Khan 2005, NACS 2002, and Nadvi and Robinson 2004). Ethnic and religious polarities existing in Pakistan also led to increased political instability. These results are consistent with those of other studies and suggest that during this period has been the most unstable period so far as Pakistan's macro-economic and political situation is concerned. Due to bad governance and corruption during the two tenures each of Prime Ministers Benazir Bhutto and Nawaz Sharif, the macro-economy and political situation went on a tail spin. General (Retired) Pervez Musharraf (Ex-President) came to power through a military coup in 1998 and retained effective executive power until August 2008. "The Pakistan Peoples Party came out on top at the February 2008 elections, no doubt helped by a substantial sympathy vote following the killing of the party's leader, Benazir Bhutto, in December 2007" (PRS 2011). However, it is important to mention here that the present government of President Zardari is accused of massive corruption in Pakistan politics for the last four years.

September 11, 2001 changed Pakistan's macroeconomic fortunes significantly (Hashmani 2010). Since the external constraint was the biggest problem for the macro-economy for the past decade or so, several direct and some indirect benefits came in the offing. The most important of which was a significant re-profiling of Pakistan's external debt. Indirectly, reverse capital flight from Pakistanis resident abroad — in order to avoid scrutiny of their funds — resulted in foreign remittances having trebled in the last two years. This also accords with the earlier observations, which showed that in 2002-03 economic growth revived in Pakistan (Khan 2004 and Javaid 2010).

The simulation model was also designed to determine the effect of military in politics in the history of this country. The military has formally intervened in the political process four times in the history of Pakistan. The present findings seem to be consistent with other research which found that military is as important a political entity as others if one is to understand the reasons for political instability in Pakistani politics. Moreover, the civil-military tension in Pakistani politics lies at the heart of political instability experienced in the last decade. To the extent that political stability and adherence to constitutional norms is important for pro-poor change, resolution of this tension takes priority. As suggested by Nadvi and Robinson (2004), "the establishment of the rule of law came under serious challenge in Pakistan throughout the 1990s amidst ethnic and sectarian conflicts. The persistent tendency of the military to topple civilian governments is itself the major violation of the rule of law in Pakistan. The state's inability to establish the rule of law at a more micro level is a more serious challenge to its authority and legitimacy. The relations between Pakistani national security agencies and armed militant groups operating outside Pakistani borders became the focus of attention worldwide. A number of somewhat threatening labels were used to

describe the condition of the state and its prognosis. These ranged from labelling Pakistan a ‘weak’ state to calling it a ‘rogue’ state”.

“Corruption in the judiciary, police and other law enforcement agencies is of most concern to the public, not simply because the incidence is so high, but also because it tends to be coercive rather than collusive and because the public recognise the devastating impact on law and order, human rights and the legitimacy of the state. It is a massive breach of trust” (NACS 2002). Table 5.6 demonstrates the key factors which include economic, social, cultural, developmental, political, and judicial causes of corruption in modern day Pakistan. Hashmani (2010) argues that inefficient decisions by the government, lawlessness, crime and political power, an inefficient justice system, and serious erosion of legitimacy of authority is causing corruption in Pakistan which has been diluted in the blood of a large number of government officials and other power shareholders and is difficult to expose because, on the one hand the legislation is sometimes unclear and open to interpretation and sides with the corruptors, and on the other hand there is no respect for law even if clearly available.

<b>Economic</b>	Inadequate pay, pensions and public service provision, plus large families.
<b>Social and cultural</b>	Conflict between demands of modern bureaucracy and demands of <i>baradri</i> (Nepotism), family, ethnic and other ties; social pressures for ostentatious demonstration of wealth, dowry and to provide for one’s children.
<b>Developmental</b>	Low rates of literacy, social empowerment and opportunities for self-improvement; inequitable distribution of wealth and economic growth.
<b>Political</b>	The feudal power structure at the rural level; low levels of political competition; political instability, and intermittent military rule, have weakened institutions; with poor example set by politicians.
<b>Legal and judicial</b>	Justice is inaccessible, slow and selective, encouraging contempt for the law and an attitude of “everyone for themselves”.

**Table 5.6: Causes of Corruption in Pakistan (NACS 2002)**

It has been argued by some researchers that the developing countries normally have much higher corruption than developed countries because the government typically occupies a strategic position in processes of early capitalism. While this is generally true for all developing countries, the incidence of corruption and its effects are varied because state capacities, policies and social and political contexts vary widely (Khan 2005). It is pointed out by Mahrwald (2009) that major sectors of Pakistan’s social, political and economic structure, mainly politics and governance institutions, are ruled by the elites or feudal families, hampering the rule of law and democracy for the sake of their own interests. It is generally the elite and privileged class benefiting in regard to economic and social justice, access to quality education and health services or access to the judicial system.

So far, Pakistan has been included in a number of research studies on perception of corruption, both on national and international levels. The Pakistan Country Assistance Evaluation report (World Bank 2011) provides an independent assessment of World Bank assistance to Pakistan during the period 1994-2003. It analyses the objectives and content of the Bank’s assistance program during this period, and the outcomes in terms of economic and social

development in Pakistan. Annual international studies conducted by Transparency International measure corruption as Corruption Perception Index (CPI) since 1995. Pakistan has been included in almost all the surveys conducted by Transparency International. As shown in Table 5.7, Pakistan's CPI for the year 2010 (2.3) indicated deterioration compared to 2009 CPI score of 2.4<sup>23</sup>. In fact, corruption is perceived to have gotten much worse over the last 20 years in Pakistan (Transparency International Pakistan 2010).

Year	Rank	Score	Number of Countries
1995	39	2.25	41
1996	53	1	54
1997	48	2.53	52
1998	71	2.7	85
1999	87	2.2	99
2001	79	2.3	91
2002	77	2.6	102
2003	92	2.5	133
2004	129	2.1	147
2005	144	2.1	159
2006	142	2.2	163
2007	138	2.4	179
2008	134	2.5	180
2009	139	2.4	180
2010	143	2.3	178

**Table 5.7: Pakistan's Ranking on Corruption Perception Index (Transparency International 2010)**

Moreover, the results of the National Corruption Perception Survey 2002, 2006, 2009 and 2010 conducted by the Transparency International Pakistan chapter (TIP) shows that corruption has increased in Pakistan over the past three years. According to National Corruption Perception Survey of TIP (2010), police remains the most corrupt institute, water and power was seen as 2<sup>nd</sup> most corrupt, and land administration has moved up from being 4<sup>th</sup> corrupt since the last two surveys to being third (see Table 5.8).

According to the literature, in the case of petty corruption there is hardly any arm of the government, which does not suffer badly from corruption (see Table 5.8), the institutions most at risk from corruption are police, power, land admin, education, local government, judiciary, health,

<sup>23</sup> CPI score ranges from 0 to 10, where 0 indicates a highly corrupt society and 10 a corruption free society.

taxation, custom and tendering and contracting agency (Transparency International Pakistan 2010).

Rank	2010	2009	2006	2002
1	Police	Police	Police	Police
2	Power	Power	Power	Power
3	Land Admin	Health	Judiciary	Taxation
4	Education	Land Admin	Land Admin	Judiciary
5	Local Government	Education	Taxation	Custom
6	Judiciary	Taxation	Custom	Health
7	Health	Judiciary	Health	Land Admin
8	Taxation	Local Government	Education	Education
	Custom	Custom	Railway	Railway
10	Tendering and Contracting	Tendering and Contracting	Bank	Bank

**Table 5.8: National Corruption Perception Survey  
(Transparency International Pakistan 2010)**

In Pakistan, the political will of the government to fight corruption is lacking which has the result in recent years that the Supreme Court of Pakistan has taken suo-moto action against mega corruption in Pakistan Steel, Rental Power Plants, and National Insurance Company Limited (Transparency International Pakistan 2010).

According to Transparency International's 2010 CPI, New Zealand, Singapore, and Denmark tie for first place (least corrupt) with scores of 9.3. Unstable governments, often with a legacy of conflict, continue to dominate the bottom rungs of the CPI. Afghanistan and Myanmar share second to last place with a score of 1.4, with Somalia coming in last with a score of 1.1 (Transparency International 2010) .

Kaufmann and Kraay (2003) suggest that the use of accountability for political victimisation in Pakistan has brought it to such disrepute in the public eye that even legitimate attempts to bring the corrupt to the books have met with cynicism, suspicion and ridicule. Moreover, in the absence of transparency and accountability the ruling elites use public offices for their personal and familial progress by appointing their cronies and confidants to key departments – Police, Revenue, Education, Health and Public Works (Reinforcing loop  $R_c$  in Figure 5.4). The foremost preoccupation of these appointees is to divert the resources away from the general public to themselves, their cronies and their benefactors (Khan 2005)

According to Hussain (2008), mechanisms of transparency and accountability become weak over time in Pakistan. Moreover, excess of discretionary powers, violation of the rules and diversion of public resources for private profits become the norms of behaviour. The accountability mechanisms were used selectively to win over the opponents of the ruling parties or the military

regimes or to pressure them in case they refuse to cooperate. On the other hand, Rose-Ackerman (2004) suggested that just pointing to the magnitude of the problem would not help to determine solution, because of the diversity of circumstances that produce corruption and poor governance.

Shafqat (1999) emphasises that political leadership and bureaucracy have to develop a transparent and efficient partnership for promoting public interest and ensuring good governance in Pakistan (see Figure 5.4). An adversarial relationship between the two or an interlocking to protect the vested interest of privileged groups would only harm the growth of robust institutions, weaken effective governance, and consolidation of democracy. Haggard (1997) indicates that corruption is mainly caused by a constant failure of governance. To root out corruption, a working system of governance must be constructed or reconstructed. In many cases, adequate provisions are in place to fight corruption. The missing element in the case of Pakistan is political will to enforce them.

According to Davoodi et al. (1998) and Hussain (2008), corrupt politicians try to spend more funds on those projects which may produce large commissions or kickbacks. Public officials may be interested to take a share in private entities which are subjected to some government permissions or licenses. Tax collectors may enjoy their discretionary powers to distribute the tax money instead of paying to the Government exchequer. Ullah and Ahmed (2006) suggest that corruption affects economic growth, social norms, and political structure of the country equally and very negatively; it requires serious commitment from government to root out corruption. "Corruption being an extraordinary crime needs extraordinary measures to be taken to determine the future of the agenda for corruption eradication. The truth is that getting rid of corruption shall help the country overcome most of the problems and probably everybody would be better off if corruption were to be eliminated" (Chene 2008, Tanzi and Davoodi 1997).

Since the 1980s, foreign aid has at best been treated as a contingency for balance of payments support making an objective analysis of foreign funded projects quite difficult. Development projects in Pakistan have been victims of unprofessional management, badly identified projects and political interference, as well as other vested interests seeking political gain. Very few development projects have been completed. Instead, development funds have been used to win political loyalties and to reward the ruling party parliamentarians (Chene 2008, Alam 1995). The present findings seem to be consistent with other research which found that income poverty was declining up until 1996 and started increasing after that. With positive GDP growth, increase in poverty was associated with worsening income inequality (see Figure 5.12).

In summary, I developed the system dynamics model based on the cause and effect relationship among variables related to the economic, social, political, judicial and cultural factors, represented in a causal loop diagram, which gives a broader picture of the dynamics of corruption in a country (Pakistan). This guided the design of a computational model with iThink™, whose outcome is useful in formulating anti-corruption strategy at the government level. System dynamics simulation provides a better picture by giving five different scenarios to control corruption. The

behaviour of income inequality and level of GDP lead to changes in the level of corruption. On the other hand, a change in economic openness of a country for international trade substantially improves the level of GDP. Moreover, future scenarios were planned with different combinations of inputs, simulating for different level of corruption in the country.

The present results are significant in at least two major respects: a) Firstly, I have attempted in this study to define characteristics of a causal loop diagram and reference mode and how it is distinguished from historical data, both qualitative and quantitative. "A reference mode is an abstract concept considering past as well as inferred future behaviour. It is important to mention here that a reference mode is an end product of the learning process that is similar to the process involved with building a model and analysing it" (Saeed 2001), b) Secondly, the simulation model in this chapter provided the model builder with a clearer and more stable picture of the corruption dynamics than a thematic analysis of qualitative data. The findings also contribute to the understanding of two additional important subjects. First, corruption is an important channel through which income inequality adversely affects economic growth. Secondly, improvement in Income inequality decreases corruption, which in turn encourages economic growth.

---

## 6 Conclusion

*“One of the biggest curses from which Sub-continent is suffering, I do not say that other countries are free from it, but, I think our condition is much worse, is bribery and corruption. That really is a poison. We must put it down with an iron hand”.*

Presidential address to the Constituent Assembly of Pakistan,  
Quaid-i-Azam Muhammad Ali Jinnah (1947)

This last chapter rounds off the thesis as a whole by providing a brief summary of major findings, plus theoretical and practical contributions of this study, as well as recommending opportunities for further research that this study has opened up.

### 6.1 Summary of Major Findings

The review of the related research carried out in the present study suggests that most of the theoretical and empirical literature on corruption suggests negative effect of corruption on social, economic, political, cultural and judicial factors studied in this research. From the analysis of the data of 30 semi-structured interviews carried out for this study collected from key stake holders such as: government ministries or agencies, donor agencies, judiciary, police department, non-governmental organisations and the general public, this study incorporates mixed methodology to understand the phenomenon of corruption.

It is important to mention here that one of the most difficult challenges in studying corruption is collecting data. It is often assumed that studying corruption is difficult due to the clandestine nature of corrupt activities. Understandably, many people who are part of corrupt systems are hesitant to admit their interaction with it even when it is pervasive and not always willing to talk openly about their corrupt dealings. With this in mind, in this study during data collection, I first try to build trust with the people, to let them know that I have only a research purpose.

The present study was designed to extend our understanding of corruption by using a system dynamics approach side by side with qualitative data analysis approach (thematic analysis). Indeed, as a result of this study, I can offer an explanation that uncovers the underlying factors that address the dynamics of corruption, social, economic, political, judicial and cultural factors in the case of any developing country, which can be applied with some modifications for the developed world as well. This explanation gives an answer to the research questions presented in the introductory chapter. In this research I try to systematically explore the problem of corruption in societies by incorporating very complex and different social, cultural and even religious aspects that were mostly untouched in system dynamics studies in the past. Returning to the question posed at the beginning of this study, it is now possible to state that the problem of corruption is studied in a broader perspective by using the system dynamics methodology. Moreover, the study has gone some way towards enhancing our understanding of corruption by using two different methodologies.

### **6.1.1 Thematic Analysis**

This study has investigated perceptions of corruption as it is experienced by people on a day to day basis in Pakistan. The major contribution of the study is to provide some rich insights as to the perceptions and experience of corruption in Pakistan. Some of the key findings, such as the effect of inflation, government size, transparency in international negotiations and the juxtaposition of religious values with corruption, have not been widely discussed in the literature. The phase-I of this study offers a snapshot of the everyday phenomenology of corruption from qualitative material collected during the April-June 2009 period in (Islamabad) Pakistan, which looked into individual perceptions of corruption. Based on interviews with experts from the target groups described above, I analysed the interview transcripts using qualitative data analysis techniques.

A rich picture of corruption in Pakistan was obtained through interviewees. None of the interviewees were complacent or accepting of such corruption, but at the same time, a feeling of helplessness about corruption was also evident, as it was seen as an intractable problem; which supported my argument that the phenomenon of corruption in Pakistan described by the experts needs to be understood in terms of the dominant pattern of corruption perception.

One of the more significant findings to emerge from this study is that the interviewees consider that corruption is a daily practice that became a fundamental mechanism for the working of different public and private institutions in Pakistan. In this study I have analysed the causes and consequences of corruption in detail as narrated by the interviewees in previous chapters. This study has found that generally the main corrupt mechanism denounced by the interviewees in their daily life is the abuse of power by public officials. The evidence from this study suggests that corruption is deeply widespread and it has serious consequences for the Pakistani society (Diamond 1993, 1994).

However, it is important to note that the interviewees have different perceptions about corruption, as most people would agree in naming corrupt acts such as bribery, paying for legally obtainable service, extortion, etc as corrupt activities. The study has gone some way towards enhancing our understanding of corruption by applying a thematic analysis approach. I also endeavour to discover lines of thought and interpretations of those social practices that the interviewees categorise as corrupt and the underlying meaning of corruption that they imply. The findings of this study suggest that political will is a prerequisite for combating corruption and building confidence in the ruling structures and public administration. "Political will, however, arises from the ratio, in economic terms, of costs and benefits, i.e. expected political losses and gains of the government from the implementation of appropriate policy measures, including the anti-corruption measures" (Boniolo and Elbert 2005).

As I discussed in Chapter 4, a key element for progress in advancing the rule of law is the leadership of key actors, both within and outside the justice system. One of the more significant findings to emerge from this study is that the system of disclosing, processing and punishing of corrupt acts will only be useful in the conditions of a prevailing rule of law and the efficient state, based on the rule of law supported by an effective judicial system. Low public confidence could also threaten the judicial system's institutional legitimacy and further undermine the rule of law.

The current study also found that in the social, cultural and political matrix of Pakistani society, corruption is associated with a gradual loss of value systems, and even identity. This study confirms many of the causes of corruption as outlined in the Corruption Perception Survey carried out by Transparency International Pakistan in year 2010, shown in Chapter 4.

Some of the richer findings from the interviews indicate that corruption has emerged as a potential risk to the stability of society and is causing breaches in social order. These results are consistent with those of other studies and suggest that corruption contributes directly to poverty by depriving the poor of public services and benefits. The menace of corruption is embedded in a multitude of issues and challenges. Its roots are linked to poverty, income inequality, injustice, mistrust, extremism and illegal activities (Gupta and Abed 2002, Khan 2004, and Javaid 2010). It is important to distinguish between the social acceptance or willingness to tolerate some forms of corruption and a rational decision to do so because it seems to be either the easiest or most beneficial option. In that respect, acceptance of corruption is not all culture-specific. It is important to note that almost all the respondents in this study agree that corruption is deeply rooted and it has serious consequences for Pakistani society.

The existing body of research does not offer much insight into social, economic and cultural roots of systemic corruption and its tolerance in Pakistan. Even though it is perhaps true that corruption can never be completely eradicated in any society, it is important to take into consideration both habitual and cost-benefit sources of tolerance towards corrupt acts in the fight against corruption. It is my hope that this research contributes to discussions on the nature of

corruption, which necessarily occur across many academic disciplines, in order to seek comprehensive strategies to combat corruption.

In Pakistan, no doubt, there exists a public and political awareness of the problem of corruption. However, it remains to be assessed to what extent perseverance in political will for combating corruption will yield results in future. The evidence from this study suggests that observed differences, of the existing, and competing patterns of perception of corruption, are a possible impediment to co-ordinated and efficient anti-corruption activities — especially if a widespread disbelief in the existence of political will to combat corruption is taken into account.

### **6.1.2 System Dynamics Modelling**

While significant amounts of corruption modelling have been carried out in the past using econometric approaches, the technical knowledge needed to understand and comment on those approaches tends to limit their usefulness except among interested experts. To understand corruption, econometric analysis is not enough. Econometric studies have brought about useful insight into the many facets of corruption modelling, while efforts mostly have focused on supporting theories with linear approaches of analysis. System dynamics offers an opportunity to understand and communicate these systems and their dynamics with its non-linear approach (Forrester 1987, Sterman 2000). Most importantly, qualitative data analysis also provides input as well as foundation for a system dynamics model of corruption for this study.

In this context, I develop a system-dynamics-based simulation model to understand the dynamics of corruption involving economic, social, political, cultural and judicial factors. As I discussed in the previous chapters, analysing economic, social, political, cultural and judicial factors is important to understanding the phenomenon of corruption. The corruption model consists of thirteen stocks: Level of Corruption, Democratic Accountability, Law and Order, Peoples Attitude against Corruption, Government Stability, Military in Politics, Government Expenditure, Organised Crime, Level of Gross Domestic Product, Income Inequality, Economic Openness, Inflation and Socioeconomic Conditions. “The corruption is not merely economic phenomena but deeply rooted in many aspects of social dynamics, politically and economically embedded inside the culture of the entire people in all level of social hierarchies” (Situngkir and Khanafiah 2004).

In this study, I endeavour to develop a system dynamic model of corruption which captures key elements of the behaviour of corrupt systems, which are described in the literature and occur in the real world, as described by the interviewees. I developed a stock and flow diagram on the basis of nine feedback loops involving important variables. Moreover, by applying a qualitative system dynamics approach, I endeavour to find out perceptions, interpretations and understandings of those practices that the interviewees categorise as corrupt, and the underlying meanings of corruption that they imply. The study has gone some way towards enhancing our understanding of corruption by explaining why the corruption activities influence the socioeconomic conditions in the

country as well as the wealth of citizens, as shown in the stock and flow diagram in the previous chapter.

The present study confirms previous findings and contributes additional evidence that suggests the problem of corruption in societies is undoubtedly very complex and involves different economic, political, social, cultural and even religious aspects that were incorporated in the system dynamics model of corruption. "System dynamics proposes to construct a useful understanding of a situation via the elaboration, validation, exploitation and interpretation of a simulation model, based heavily on mental models" (Soto-Torres et al. 2007). One of the more significant findings to emerge from this study is that the simulation results indicate an increase in level of GDP in the short-run in scenario 4 and 5 but in the long-run these prove to be the most effective to better manage economic indicators like inflation and income inequality. This finding indicates Pakistan's economic potential if it could raise and effectively utilize sources required to finance its needs.

In summary, in recent years and especially in the 1990s, a phenomenon broadly referred to as corruption has attracted a great deal of attention. In countries developed and developing, large or small, market-oriented or otherwise, governments have fallen because of accusations of corruption, prominent politicians (including presidents and prime ministers) have lost their official positions, and, in some cases, whole political classes have been replaced (Johnston 1997). According to Tanzi and Davoodi (1997), if any government wants to root out corruption then their leadership must show zero tolerance and honest and visible commitment. Moreover, as shown in the rich picture of CLD (Figure 5.4), if government increases public sector salary or gives incentives towards honest behaviour it will ultimately result in decreasing the level of corruption.

## **6.2 Theoretical and Practical Contribution**

This study addresses the issues of corruption in specific contexts where research work has been limited so far. For this reason, this research shows significance from both the theoretical and practical perspective. Because corruption belongs to a class of complex social problems, I expect useful insights from this study will be applicable in new areas. From the obtained results, I judge this research demonstrates value from both theoretical and practical perspectives. According to Gregor (2006), "Theories are practical because they allow knowledge to be accumulated in a systematic manner and this accumulated knowledge enlightens professional practice".

The fact that this research was conducted using a case study method for developing a system dynamics model of corruption proves valuable from both a theoretical and a practical point of view. It provides a conceptual framework that illuminates the anticipated causes and consequences of corruption in the society. Moreover, this study adopted a research process of system dynamics modelling developing causal loop diagram, and then it is used in building a simulation model that has passed through validation. Its initial results — based on the simulation graphs — show that there are interesting links between the social, economic, political, judicial and cultural factors in the corruption model.

The present study, however, makes several noteworthy contributions to by merging of different models, which can assist in clarifying the way in which corruption works and ways in which it can be limited. However, it is possible that, with this modelling effort, the system dynamics approach can overcome limitations, where significant amounts of work on corruption modelling have been carried out using various econometrics and mathematical approaches, and the model developed in this study can be improved further by adding more variables which this study did not take in to account for simulation. Most importantly, in this study I adopt detailed steps described in Chapter 3 of system dynamics modelling to simulate a corruption model.

### **6.2.1 Theoretical Contribution**

In fact, this study on dynamics of corruption focuses on variables related to a system dynamics model of corruption, i.e., the cause and effect of corruption on social and economic development, politics. Moreover, the causes of corruption in a country are generally related to its judicial system, social and ethical values. One of the important advantages of using system dynamics models to study public policy issues or problems is that they can easily be extended or revised to address additional questions as they arise (Singer and Kimbles 2004).

Furthermore, according to Maldonado (2011), the theoretical contribution of these types of studies is that methods such as system dynamics with the ability to: a) bring together a whole group of quantitative indices (creating an explicit relation among them and addressing the single quantitative index problem), (b) quantify qualitative values (rather than disregarding them as being too soft), and (c) bring both metrics together in an environment where they can be discussed to reach at least some modest degree of consensus; might improve the anti-corruption strategy, ultimately leading to an equitable distribution of resources and economic growth.

As mentioned earlier, there is large amount of literature available on corruption which has adopted different approaches to study the incidence of corruption. This study adopts a different stance; it makes use of and incorporates different theories from different disciplines. This research would help in investigation of problematic issues by using a system dynamics approach, especially with regards to corruption. This study employs a method that has been rarely used in corruption studies — the system dynamics method.

### **6.2.2 Practical Contribution**

From a practical viewpoint the possible contribution should be a simple and clear framework, which will be helpful in understanding the problematic issues in a more robust way. For this purpose, a refined systems dynamics model of corruption would be of use to donor agencies, policy makers and non-governmental organisations in understanding the complex nature of corruption. By conducting the research using a qualitative data analysis approach (Thematic Analysis) and system dynamics modelling, a valuable philosophical framework is provided for developing and developed countries (with some modification) to understand problematic issues in a new

perspective. Furthermore, the practical contribution is the integration of quantitative and qualitative tools into a model that allows better understanding of the dynamics of corruption for solving this problem.

### **6.3 Limitation of the Study**

The fact that the scope of this study relates to a particular region in a specific country (Pakistan) in South Asia means that it has some limitations, but at the same time, new research opportunities are opened. It is also important to recognize the limitations of system dynamic modeling. Models can only be detailed to a certain extent; too much detail may detract from the overall problem. It is important to remain focused on a research problem when building a system dynamics model. Moreover, it may not be usual in system dynamics modelling to base a model almost entirely on indices or qualitative variables rather than actual values or quantitative variables, but this should not be a matter of concern to build a system dynamics model.

It is pertinent to mention here that to determine the impact of qualitative/soft variables, including intangibles or social/cultural variables, and combining them as necessary with quantitative/hard variables in system dynamics models is a significant challenge for this study. Qualitative/Soft variables can be difficult to measure or estimate and it may be difficult or impractical to apply universally-applicable scales to them. Qualitative/Soft variables include a class of variables referred to as 'intangibles'. For example, it might be argued that 'quality of leadership' if used as a variable in a system dynamics model could be measured according to the presence or absence of certain leadership qualities; on this basis we could establish a measure of quality of leadership. However, the individual leadership qualities such as personal integrity would be considered as intangibles.

Many qualitative/soft variables are not amenable to being 'scaled' in any absolute sense, in which case anything other than a comparative measure might be misleading or inappropriate, and ratio scales can lead to confusion when applied to different baselines. To assess that an individual has personal integrity, and to apply a score to an individual leader on the basis of some universal 'integrity' scale may prove problematic at best. This is the nature of intangibles.

### **6.4 Future Research Avenues**

The issue of corruption is very wide and the study of particular questions or approaches to fight against it undoubtedly provides new ways for its study. In particular, the proposed model to the need for admits refinements. Some of them would be merely technical and others would be related to the introduction of new questions that will lead to consideration of new variables. Among those of the first kind there are various alternatives. For example, the model can be improved by adding variables that I excluded in this study. Among the second kind, it would be possible to compare the effects of corruption in countries with a different level of development

Moreover, agent-based simulation can be done for this model that might help in understanding the interactions in the micro level/individual level. Such studies in future can be integrated with the system dynamics model of corruption for changing parameter values. For instance individuals changing their attitude towards corruption might change the behaviour of the official with whom she is transacting and that might influence others, etc. I believe that future research to enhance the present model in various directions needs to be done by adding more economic, social, legal, political, cultural, ethical, psychological factors to better understand the dynamics of corruption in a more holistic way.

Extensions to the simulation model are possible in several areas. Firstly, adding qualitative variables and/or other feedback relationships might reveal important insights into the dynamics of corruption and behaviour over time, particularly following any policy intervention. Examples include variables such as “*Control over appointments by influentials, Governance, Government revenue, Inappropriate recruitment, Internal conflicts, International funding/agreement, Jobs in the government, Moral values, Payments to influentials, Religious values, Salary level, Service delivery, Social exclusion, Transparency in international negotiations, Trust, Underground or informal economy*”. If there is available data, they can be incorporated into the simulation by inventing units and measurement scales and applying these consistently throughout the simulation model.

During a model development, the modellers usually go through a series of tentative models that finally stabilise — temporarily — in the form of the validated model. In the longer run, experience from acting in the real world will lead to remodelling, bringing about new validated versions. Nonetheless, both the qualitative and the system dynamics analyses reiterate several conclusions disseminated by previous works. It seems likely that a continued effort, including the expansion of these models, could assist in clarifying the way in which corruption works and ways in which it can be limited.

The approach adopted in this study could easily be applied elsewhere. The process of expert interviews and the development of a causal loop diagram is a generic one which could be used for any country. Religious and ethical values in different part of the world may differ slightly but will share many common features, and the iThink™ simulation model could easily be reconfigured for a different country and repopulated with the appropriate data. Much of the necessary data are routinely collected by Political Risk Services, USA. I believe this approach could make a substantial, practical contribution to the improvement of anti-corruption policies.

## Appendix I – Interview Schedule



### DEPARTMENT OF INFORMATION SYSTEMS AND OPERATIONS MANAGEMENT

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

### Interview- Donor Agency

#### Introduction:

I am M Aman Ullah an interviewer. The study is part of a Ph.D research at the University of Auckland Business School and financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA). I am conducting a survey among Government Officials, Donor Agencies, Non-governmental Organisations and Citizens in order to understand their perspective on the understanding of corruption. I would like to assure you that we are only interested in your opinion regarding the issue of corruption and your answers will be confidential. May I have a few minutes of your time now to ask you some questions?

1. Yes, continue
2. No, new appointment, refused etc

#### **Section I: Indicative Corruption Questions**

I would like to speak to you about corruption in general.

**Q1.** What do you understand by the word "corruption"? What does it mean to a person like yourself?

**Q2.** Can you give me few examples of corruption?

**Q3.** What is the extent and nature of corruption? Is it growing, declining, changing and how?

**Q3.1.** You mentioned that corruption increased. Why do you say so?

**Q3.2.** You mentioned that corruption decreased. Why do you say so?

**Q4.** What about the next few years? Do you expect levels of corruption to increase, stay about the same, or decrease?

**Q4.1.** You mentioned that corruption will increase. Why do you say so?

**Q4.2.** You mentioned that corruption will decrease. Why do you say so?

**Q5.** What do you think is the MAIN cause of corruption in Pakistani society in general?

**Q6.** What do you think is the MAIN cause of corruption in government (Institutions run by government) in Pakistan?

**Q7.** How well would you say the government is handling the matter of fighting corruption?

**Q8.** How committed do you think the government is to fight corruption?

**Q9.** Does the government have sufficient resources to fight corruption?

**Q10.** What is government doing RIGHT in the fight against corruption?

**Q11.** What is government doing WRONG in the fight against corruption?

**Q12.** Besides government, Is corruption a serious problem in any other areas of Pakistani society?

**Q13.** Are corruption and fraud more prominent in the public or the private sector or is it about the same in both?

**Q14.** What is your interpretation of the seriousness of corruption in Pakistan?

**Q15.** What are the main efforts being made to fight corruption and how effective do they seem to be?

**Q16.** What institution is mainly responsible to counter problem of corruption in Pakistan?

**Q17.** Should corruption issues be a requirement of the Multilateral programming process?

**Q18.** How should we program in an environment of systemic corruption?

**Q19.** What are the current and upcoming major anti-corruption activities (policy, legislative and monitoring) and what role can donor agencies play in promoting and supporting them?

## **Section II: Specific Corruption Questions**

**Q20.** With which ONE of the following statements do you agree most?

1. Pakistan has a lot of corruption and it is one of the most serious problems the country is confronted with
2. Pakistan has a lot of corruption, but this country is confronted with other, more serious problems
3. Pakistan does not experience a lot of corruption, but it is still one of the most serious problems the country is confronted with
4. Pakistan does not experience a lot of corruption and it is not among the serious problems the country faces

**Q21.** In general, which of the following statements would you think best describes the majority of cases where an official has to be bribed in exchange for a service or for solving a problem?

1. The public official requests or hints payment
2. The offer is made by the citizen
3. It is known beforehand to both sides how it is done and how much to pay

**Q22.** I would like to read you a list of statements concerning corruption in government. For each, please tell me whether you 1) strongly agree, 2) agree, 3) neither agree nor disagree, 4) disagree, or 5) strongly disagree.

1. Government officials are so poorly paid that they have no choice but to ask people for extra payments
2. Paying bribes to government officials or doing favours for them helps overcome the red tape of bureaucracy and makes it easier to get things done
3. Democratic systems of government increase the amount of corruption in a country
4. By selling government factories and businesses to private citizens (privatisation), the potential for corruption in government increases
5. Government officials have excessive autonomy in decision making
6. Judicial system is not effective in fight against corruption
7. Weak democratic system causes corruption
8. Corruption is a legacy of colonial system
9. Lack of education is one of the causes of corruption in Pakistan
10. Lack of religious practice / knowledge and ethical values increase level of corruption in society.

**Q23.** Elected politicians found guilty of serious corruption and fraud could face a number of situations: which one of the following do you think is the most appropriate?

1. Lose their position and go to prison
2. Lose their position and have to pay a fine

3. Lose their status as elected politician
4. It depends on the nature of the corruption
5. There should be no penalty for this
6. Don't know

**Q24.** Civil servants found guilty of serious corruption and fraud could face a number of situations: which one of the following do you think is the most appropriate?

1. Lose their jobs and go to prison
2. Lose their jobs and have to pay a fine
3. Lose their jobs only
4. Transfer/demotion/fine
5. It depends on the nature of the corruption
6. There should be no penalty for this
7. Don't know

**Q25.** There are numerous agencies that exist to fight corruption in Pakistan. For each, please tell me whether you think they are 1) very effective, 2) effective, 3) not very effective, or 4) not at all effective in fighting corruption in government. If you have not yet had a chance to read or hear about the institution, please feel free to tell me.

1. Anti-Corruption Department
2. National Accountability Bureau (NAB)
3. Federal Investigation Agency (FIA)
4. Office of the Auditor General
5. Office of the *Wafaqi Mohtasib* (Ombudsman) of Pakistan
6. Accountability Court
7. Civil Courts

Thank you for the time and input provided during this interview.



**DEPARTMENT OF INFORMATION SYSTEMS AND  
OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

**Interview- Government Officer**

**Introduction:**

I am M Aman Ullah an interviewer. The study is part of a Ph.D research at the University of Auckland Business School and financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA). I am conducting a survey among Government Officials, Donor Agencies, Non-governmental Organisations and Citizens in order to understand their perspective on the understanding of corruption. I would like to assure you that we are only interested in your opinion regarding the issue of corruption and your answers will be confidential. May I have a few minutes of your time now to ask you some questions?

1. Yes, continue
2. No, new appointment, refused etc

**Section I: Indicative Corruption Questions**

I would like to speak to you about corruption in general.

**Q1.** What do you understand by the word "corruption"? What does it mean to a person like yourself?

**Q2.** Can you give me few examples of corruption?

**Q3.**What is the extent and nature of corruption? Is it growing, declining, changing and how?

**Q3.1.** You mentioned that corruption increased. Why do you say so?

**Q3.2.** You mentioned that corruption decreased. Why do you say so?

**Q4.** What about the next few years? Do you expect levels of corruption to increase, stay about the same, or decrease?

**Q4.1.** You mentioned that corruption will increase. Why do you say so?

**Q4.2.** You mentioned that corruption will decrease. Why do you say so?

**Q5.** What do you think is the MAIN cause of corruption in Pakistani society in general?

**Q6.** What do you think is the MAIN cause of corruption in government (Institutions run by government) in Pakistan?

**Q7.** How well would you say the government is handling the matter of fighting corruption?

**Q8.** How committed do you think the government is to fight corruption?

**Q9.** Does the government have sufficient resources to fight corruption?

**Q10.** What is government doing RIGHT in the fight against corruption?

**Q11.** What is government doing WRONG in the fight against corruption?

**Q12.** Is corruption a serious problem in Pakistani society?

**Q13.** Are corruption and fraud more prominent in the public or the private sector or is it about the same in both?

**Q14.** What is your interpretation of the seriousness of corruption in Pakistan?

**Q15.** What are the main efforts being made to fight corruption and how effective do they seem to be?

**Q16.** What institution is mainly responsible to counter problem of corruption in Pakistan?

**Section II: Specific Corruption Questions**

**Q17.** With which ONE of the following statements do you agree most?

1. Pakistan has a lot of corruption and it is one of the most serious problems the country is confronted with
2. Pakistan has a lot of corruption, but this country is confronted with other, more serious problems
3. Pakistan does not experience a lot of corruption, but it is still one of the most serious problems the country is confronted with
4. Pakistan does not experience a lot of corruption and it is not among the serious problems the country faces

**Q18.** In general, which of the following statements would you think best describes the majority of cases where an official has to be bribed in exchange for a service or for solving a problem?

1. The public official requests or hints payment
2. The offer is made by the citizen
3. It is known beforehand to both sides how it is done and how much to pay

**Q19.** I would like to read you a list of statements concerning corruption in government. For each, please tell me whether you 1) strongly agree, 2) agree, 3) neither agree nor disagree, 4) disagree, or 5) strongly disagree.

1. Government officials are so poorly paid that they have no choice but to ask people for extra payments
2. Paying bribes to government officials or doing favours for them helps overcome the red tape of bureaucracy and makes it easier to get things done
3. Democratic systems of government increase the amount of corruption in a country
4. By selling government factories and businesses to private citizens (privatisation), the potential for corruption in government increases
5. Government officials have excessive autonomy in decision making
6. Judicial system is not effective in fight against corruption
7. Weak democratic system causes corruption
8. Corruption is a legacy of colonial system
9. Lack of education is one of the causes of corruption in Pakistan
10. Lack of religious practice / knowledge and ethical values increase level of corruption in society.

**Q20.** Elected politicians found guilty of serious corruption and fraud could face a number of situations: which one of the following do you think is the most appropriate?

1. Lose their position and go to prison
2. Lose their position and have to pay a fine
3. Lose their status as elected politician
4. It depends on the nature of the corruption
5. There should be no penalty for this
6. Don't know

**Q21.** Civil servants found guilty of serious corruption and fraud could face a number of situations: which one of the following do you think is the most appropriate?

1. Lose their jobs and go to prison
2. Lose their jobs and have to pay a fine
3. Lose their jobs only
4. Transfer/demotion/fine
5. It depends on the nature of the corruption
6. There should be no penalty for this
7. Don't know

**Q22.** There are numerous agencies that exist to fight corruption in Pakistan. For each, please tell me whether you think they are 1) very effective, 2) effective, 3) not very effective, or 4) not at all effective in fighting corruption in government. If you have not yet had a chance to read or hear about the institution, please feel free to tell me.

1. Anti-Corruption Department
2. National Accountability Bureau (NAB)
3. Federal Investigation Agency (FIA)
4. Office of the Auditor General
5. Office of the *Wafaqi Mohtasib* (Ombudsman) of Pakistan
6. Accountability Court
7. Civil Courts

Thank you for the time and input provided during this interview.



**DEPARTMENT OF INFORMATION SYSTEMS AND  
OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

**Interview – Non-governmental Organisation and Citizen**

**Introduction:**

I am M Aman Ullah an interviewer. The study is part of a Ph.D research at the University of Auckland Business School and financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA). I am conducting a survey among Government Officials, Donor Agencies, Non-governmental Organisations and Citizens in order to understand their perspective on the understanding of corruption. I would like to assure you that we are only interested in your opinion regarding the issue of corruption and your answers will be confidential. May I have a few minutes of your time now to ask you some questions?

1. Yes, continue
2. No, new appointment, refused etc

**Section I: Indicative Corruption Questions**

I would like to speak to you about corruption in general.

**Q1.** What do you understand by the word "corruption"? What does it mean to a person like yourself?

**Q2.** Can you give me few examples of corruption?

**Q3.** Is the present government more, just as or less corrupt than the previous governments?

**Q3.1.** You mentioned that corruption increased. Why do you say so?

**Q3.2.** You mentioned that corruption decreased. Why do you say so?

**Q4.** What about the next few years? Do you expect levels of corruption to increase, stay about the same, or decrease?

**Q4.1.** You mentioned that corruption will increase. Why do you say so?

**Q4.2.** You mentioned that corruption will decrease. Why do you say so?

**Q5.** What do you think is the MAIN cause of corruption in Pakistani society in general?

**Q6.** What do you think is the MAIN cause of corruption in government (Institutions run by government) in Pakistan?

**Q7.** How well would you say the government is handling the matter of fighting corruption?

**Q8.** How committed do you think the government is to fight corruption?

**Q9.** Does the government have sufficient resources to fight corruption?

**Q10.** What is government doing RIGHT in the fight against corruption?

**Q11.** What is government doing WRONG in the fight against corruption?

**Q12.** During the past year, has any government official, for instance a government officer, police/traffic officer asked you or expected you or anyone you know to pay a bribe for his or her service?

**Q13.** Besides government, Is corruption a serious problem in any other areas of Pakistani society?

**Q14.** Are corruption and fraud more prominent in the public or the private sector or is it about the same in both?

**Q15.** What is your interpretation of the seriousness of corruption in Pakistan?

**Q16.** What mechanism is required to actively involve non-governmental organisations and/or citizens in fight against corruption?

**Q17.** What institution is mainly responsible to counter problem of corruption in Pakistan?

**Q18.** Do you think that religious and social values can be used to fight corruption?

### **Section II: Specific Corruption Questions**

I am now going to read out a list of institutions and offices. Please give me your opinion on whether you think they could be involved in corruption or not. Please use the following scale as read out.

1. All/almost all
2. Most
3. A few/some
4. Almost none/none
5. Haven't had a chance to hear enough about it

**Q19.** How many officials in the Office of the President/Prime Minister do you think are involved in corruption?

How many cabinet ministers do you think are involved in corruption?

How many senior government officials in legal system (judiciary and police) do you think are involved in corruption?

How many members of parliament do you think are involved in corruption?

How many civil servants, or those who work in government offices and ministries do you think are involved in corruption?

**Q20.** Can you rate the integrity of the following Government Departments on a score of 1-4, where 1=least corrupt, 2=less corrupt, 3=most corrupt, while 4=don't have an opinion.

- 1) Police,
- 2) Power,
- 3) Judiciary,
- 4) Land,
- 5) Taxation,
- 6) Custom,
- 7) Health,
- 8) Education,
- 9) Railway,
- 10) Banks, and
- 11) Civil Secretariat.
- 12) Others (SPECIFY)

**Q21.** With which ONE of the following statements do you agree most?

1. Pakistan has a lot of corruption and it is one of the most serious problems the country is confronted with
2. Pakistan has a lot of corruption, but this country is confronted with other, more serious problems
3. Pakistan does not experience a lot of corruption, but it is still one of the most serious problems the country is confronted with
4. Pakistan does not experience a lot of corruption and it is not among the serious problems the country faces

**Q22.** In general, which of the following statements would you think best describes the majority of cases where an official has to be bribed in exchange for a service or for solving a problem?

1. The public official requests or hints payment
2. The offer is made by the citizen
3. It is known beforehand to both sides how it is done and how much to pay

**Q23.** I would like to read you a list of statements concerning corruption in government. For each, please tell me whether you 1) strongly agree, 2) agree, 3) neither agree nor disagree, 4) disagree, or 5) strongly disagree.

1. Government officials are so poorly paid that they have no choice but to ask people for extra payments
2. Paying bribes to government officials or doing favours for them helps overcome the red tape of bureaucracy and makes it easier to get things done
3. Democratic systems of government increase the amount of corruption in a country
4. Process of selling government factories and businesses to private citizens (privatisation), the potential for corruption in government increases
5. Government officials have excessive autonomy in decision making
6. Judicial system is not effective in fight against corruption
7. Weak democratic system causes corruption
8. Corruption is a legacy of colonial system
9. Lack of education is one of the causes of corruption in Pakistan
10. Lack of religious practice / knowledge and ethical values increase level of corruption in society.

**Q24.** Elected politicians found guilty of serious corruption and fraud could face a number of situations: which one of the following do you think is the most appropriate?

1. Lose their position and go to prison
2. Lose their position and have to pay a fine
3. Lose their status as elected politician
4. It depends on the nature of the corruption
5. There should be no penalty for this
6. Don't know

**Q25.** Civil servants found guilty of serious corruption and fraud could face a number of situations: which one of the following do you think is the most appropriate?

1. Lose their jobs and go to prison
2. Lose their jobs and have to pay a fine
3. Lose their jobs only
4. Transfer/demotion/fine
5. It depends on the nature of the corruption
6. There should be no penalty for this
7. Don't know

**Q26.** There are numerous agencies that exist to fight corruption in Pakistan. For each, please tell me whether you think they are 1) very effective, 2) effective, 3) not very effective, 4) or not at all effective in fighting corruption in government. If you have not yet had a chance to read or hear about the institution, please feel free to tell me.

1. Anti-Corruption Department
2. National Accountability Bureau (NAB)
3. Federal Investigation Agency (FIA)
4. Office of the Auditor General
5. Office of the *Wafaqi Mohtasib* (Ombudsman) of Pakistan
6. Accountability Court
7. Civil Courts

Thank you for the time and input provided during this interview.

## Appendix III – Participant Information Sheets



### DEPARTMENT OF INFORMATION SYSTEMS AND OPERATIONS MANAGEMENT

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre

Auckland 1142, New Zealand

### PARTICIPANT INFORMATION SHEET – Non-Governmental Organisation)

**Subject: Using a Systems Approach to Investigate Perceptions of Corruption.**

Dear [Head of the Organisation],

My name is M. Aman Ullah. I am a Doctoral student in the Department of Information Systems and Operations Management, Faculty of Business and Economics, University of Auckland, New Zealand. Presently, I am on study leave from Ministry of Planning and Development, Government of Pakistan to pursue my PhD. This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA).

I am studying how a systems perspective can aid an understanding of corruption. As part of my research I am planning to conduct up to 30-40 semi structured interviews with Government Officials, Donor Agency officials, Non-governmental Organisations and Citizens in order to understand their perspective on the understanding of corruption. In our research we are planning to build system dynamics model of corruption to capture the dynamics of corruption in **social/economic/cultural/political/legal systems**. We are intending to use systems simulations on different social, economic and cultural variables and parameters. This study is about general perceptions of corruption rather than specific instances, because we are building a country wide model. I would be grateful for the chance to conduct interviews within your organisation. Participation is voluntary in all cases.

Each interview will take about 1 hour to 1½ hours and at the convenience of a participant. A participant may decline to answer any particular question(s) without giving a reason. None of the questions will be of a personal nature. To ensure accurate collection of information, with your permission, I would like to audio-tape the interview. A participant may ask for the tape to be turned off at any time during the interview process without giving a reason. Participants can withdraw the information provided within four weeks after the interview. All information gathered, including consent form, audio tape and any transcript, will be separated and securely stored on university premises, and destroyed after six years.

The information gathered in these interviews will be published in my Doctoral thesis. The information may also be included in published Journal articles and conference proceedings. You will be informed of any publications that result from this research and will be provided with a copy of the work if you request it. All individuals will be given pseudonyms in the research and any specific details that could potentially identify a participant will be removed.

I would like confirmation that participation or non participation of the staff in this study will not affect employees relationships or employment status with the organisation.

If you consent to members of your organisation participating in this study, please fill in the attached consent form and mail/email it to me.

If you have any queries or wish to know more please phone me on the number given below or write to me at:

**Contact Details in New Zealand:** Muhammad Aman Ullah, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Email: m.aman@auckland.ac.nz, Phone: (+64) 21 264 5012

**Contact Details in Pakistan:** Muhammad Aman Ullah, House No. 133, Street No. 85, Sector: G-9/4, Islamabad, Pakistan. Email: m.aman@auckland.ac.nz, Tel: ++92 300 532 5592.

Thank you very much for your time and help in making this study possible.

Yours faithfully,

M Aman Ullah

PhD Student

You are also welcome to contact my supervisor, Dr. Tiru Arthanari. He can be contacted at the following address.

**Supervisor's Contact Details:** Dr. Tiru Arthanari, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel. (+64) 9 373-7599 extn. 84857,

**Head of Department's Contact Details:** Prof. Michael Myers, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel. (+64) 9 373-7599 extn. 87468

This survey is approved by the human ethics committee of the University of Auckland. In case of any enquiries you may contact:

The Chair, The University of Auckland HUMAN PARTICIPANTS ETHICS COMMITTEE, The University of Auckland, Level 3, 76 Symonds Street, Private Bag 92019, Auckland, New Zealand. Tel. (+64) 9 3737599 extn 83711

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 8/04/2009 for 3 years on XXX, Reference Number 2009/\_010\_.



**DEPARTMENT OF INFORMATION SYSTEMS AND  
OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

**PARTICIPANT INFORMATION SHEET – Donor Agency**

**Subject: Using a Systems Approach to Investigate Perceptions of Corruption.**

Dear Participant,

My name is M. Aman Ullah. I am a Doctoral student at the Department of Information Systems and Operations Management, Faculty of Business and Economics, University of Auckland, New Zealand. Presently, I am on study leave from Ministry of Planning and Development, Government of Pakistan to pursue my PhD. This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA).

You are invited to participate in my research and I would appreciate any assistance you can offer me. As part of my research I am planning to conduct up to 30-40 semi structured interviews with Government Officials, Donor Agencies, Non-governmental Organisations and Citizens in order to understand their perspective on the understanding of corruption. The specific aim of this project is to investigate how our understanding of corruption can be extended by using a systems approach. This will be achieved by the use of simulation modelling to explore how the social system of corruption develops its stable macro-state. The inputs for the model will come from interviewees in Pakistan. Our conceptualization of corruption is that it is a social phenomenon, which involves public dealing in general, manifested as a social system of corruption is that that affects all other systems in one way or another. This study is about general perceptions of corruption rather than specific instances, because we are building a country wide model.

Each interview will take about 1 hour to 1½ hours and would be conducted at any suitable time at your preferred place. Therefore, I invite you to participate in this research activity which is a part of my PhD study. If we are unable to meet face to face, I would like to conduct a telephone interview or send you questions by email. If we meet face to face, I would like to audio-tape the interview. If at any time in the interview you feel uncomfortable, you are entitled to ask for the tape to be turned off at any time without giving a reason.

There is a very small risk that during the interview the specific details that you provide might reveal your identity if published. To combat this risk, we ensure that we will not be including any identification information that may allow you to be identified. Assurance has been obtained that participation or non-participation in this study will not affect employees relationships or employment status with the organisation.

Participation in this research is voluntary and you may decline to take part without giving a reason. You may withdraw any or all information supplied at any time up to four weeks after the interview without giving a reason. Data about you will not be obtained from any third parties, nor will information about you be given to any third parties. Information will be derived from the data collected in such a way that individuals will not be identified. All data collected will be stored securely on University of Auckland premises, and will be destroyed by shredding or secure file erase after six years.

The information gathered in these interviews will be published in my Doctoral thesis. The information may also be included in published Journal articles and conference proceedings. You

will be informed of any publications that result from this research and will be provided with a copy of the work if you request it. All individuals will be given pseudonyms in the research and any specific details that could potentially identify you as a participant will be removed. Transparency International, Pakistan will act as a contact giving general information on corruption issues for interested participants.

If you agree to participate in this research, please indicate this by filling in a Consent Form.

Thank you very much for your time and help in making this study possible. If you have any queries or wish to know more please phone me on the number given below or write to me at:

**Contact Details in New Zealand:** Muhammad Aman Ullah, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Email: m.aman@auckland.ac.nz, Phone: (+64) 21 264 5012

**Contact Details in Pakistan:** Muhammad Aman Ullah, House No. 133, Street No. 85, Sector: G-9/4, Islamabad, Pakistan. Email: m.aman@auckland.ac.nz., Tel: ++92 300 532 5592.

Contact information for my supervisor, Head of Department and the University of Auckland Human Subjects Ethics committee is provided below.

**Supervisor's Contact Details:** Dr. Tiru Arthanari, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel. (+64) 9 373-7599 extn. 84857,

**Head of Department's Contact Details:** Prof. Michael Myers, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel. (+64) 9 373-7599 extn. 87468

**Contact Details of Transparency International, Pakistan Chapter:** Chairman / Executive Director, Transparency International, Pakistan Chapter, 5-C, 2nd Floor, Khayaban-e-Ittehad, Phase VII, D.H.A., Karachi. Telephone: (+92) 21 5390408-9 and (+92) 21 5311777, Web address: www.transparency.org.pk

This survey is approved by the human ethics committee of the University of Auckland. In case of any enquiries you may contact:

The Chair, The University of Auckland HUMAN PARTICIPANTS ETHICS COMMITTEE, The University of Auckland, Level 3, 76 Symonds Street, Private Bag 92019, Auckland, New Zealand. Tel. (+64) 9 3737599 extn 83711

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON   8/04/2009   for   3   years on   XXX  , Reference Number   2009/\_010\_  .



**DEPARTMENT OF INFORMATION SYSTEMS AND  
OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

**PARTICIPANT INFORMATION SHEET – Government Official**

**Subject: Using a Systems Approach to Investigate Perceptions of Corruption.**

Dear Participant,

My name is M. Aman Ullah. I am a Doctoral student at the Department of Information Systems and Operations Management, Faculty of Business and Economics, University of Auckland, New Zealand. Presently, I am on study leave from Ministry of Planning and Development, Government of Pakistan to pursue my PhD. This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA).

You are invited to participate in my research and I would appreciate any assistance you can offer me. As part of my research I am planning to conduct up to 30-40 semi structured interviews with Government Officials, Donor Agencies, Non-governmental Organisations and Citizens in order to understand their perspective on the understanding of corruption. The specific aim of this project is to investigate how our understanding of corruption can be extended by using a systems approach. This will be achieved by the use of simulation modelling to explore how the social system of corruption develops its stable macro-state. The inputs for the model will come from interviewees in Pakistan. Our conceptualisation of corruption is that it is a social phenomenon, which involves public dealing in general, manifested as a social system of corruption is that that affects all other systems in one way or another. This study is about general perceptions of corruption rather than specific instances, because we are building a country wide model.

Each interview will take about 1 hour to 1½ hours and would be conducted at any suitable time at your preferred place. Therefore, I invite you to participate in this research activity which is a part of my PhD study. If we are unable to meet face to face, I would like to conduct a telephone interview or send you questions by email. If we meet face to face, I would like to audio-tape the interview. If at any time in the interview you feel uncomfortable, you are entitled to ask for the tape to be turned off at any time without giving a reason.

There is a very small risk that during the interview the specific details that you provide might reveal your identity if published. To combat this risk, we ensure that we will not be including any identification information that may allow you to be identified. Participation in this research is voluntary and you may decline to take part without giving a reason. You may withdraw any or all information supplied at any time up to four weeks after the interview without giving a reason. Data about you will not be obtained from any third parties, nor will information about you be given to any third parties. Information will be derived from the data collected in such a way that individuals will not be identified. All data collected will be stored securely on University of Auckland premises, and will be destroyed by shredding or secure file erase after six years.

The information gathered in these interviews will be published in my Doctoral thesis. The information may also be included in published Journal articles and conference proceedings. You will be informed of any publications that result from this research and will be provided with a copy of the work if you request it. All individuals will be given pseudonyms in the research and any specific details that could potentially identify you as a participant will be removed. Transparency International, Pakistan will act as a contact giving general information on corruption issues for interested participants.

If you agree to participate in this research, please indicate this by filling in a Consent Form.

Thank you very much for your time and help in making this study possible. If you have any queries or wish to know more please phone me on the number given below or write to me at:

**Contact Details in New Zealand:** Muhammad Aman Ullah, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Email: m.aman@auckland.ac.nz, Phone: (+64) 21 264 5012

**Contact Details in Pakistan:** Muhammad Aman Ullah, House No. 133, Street No. 85, Sector: G-9/4, Islamabad, Pakistan. Email: m.aman@auckland.ac.nz, Tel: ++92 300 532 5592.

Contact information for my supervisor, Head of Department and the University of Auckland Human Subjects Ethics committee is provided below.

**Supervisor's Contact Details:** Dr. Tiru Arthanari, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel. (+64) 9 373-7599 extn. 84857,

**Head of Department's Contact Details:** Prof. Michael Myers, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel. (+64) 9 373-7599 extn. 87468

**Contact Details of Transparency International, Pakistan Chapter:** Chairman / Executive Director, Transparency International, Pakistan Chapter, 5-C, 2nd Floor, Khayaban-e-Ittehad, Phase VII, D.H.A., Karachi. Telephone: (+92) 21 5390408-9 and (+92) 21 5311777, Web address: www.transparency.org.pk

This survey is approved by the human ethics committee of the University of Auckland. In case of any enquiries you may contact:

The Chair, The University of Auckland HUMAN PARTICIPANTS ETHICS COMMITTEE, The University of Auckland, Level 3, 76 Symonds Street, Private Bag 92019, Auckland, New Zealand. Tel. (+64) 9 3737599 extn 83711

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 8/04/2009 for 3 years on XXX, Reference Number 2009/\_010\_.



**DEPARTMENT OF INFORMATION SYSTEMS AND  
OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

**PARTICIPANT INFORMATION SHEET – Citizen**

**Subject: Using a Systems Approach to Investigate Perceptions of Corruption.**

Dear Participant,

My name is M. Aman Ullah. I am a Doctoral student at the Department of Information Systems and Operations Management, Faculty of Business and Economics, University of Auckland, New Zealand. This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA).

You are invited to participate in my research and I would appreciate any assistance you can offer me. As part of my research I am planning to conduct up to 30-40 semi structured interviews with Government Officials, Donor Agencies, Non-governmental Organisations and Citizens in order to understand their perspective on the understanding of corruption. The specific aim of this project is to investigate how our understanding of corruption can be extended by using a systems approach. This will be achieved by the use of simulation modelling to explore how the social system of corruption develops its stable macro-state. The inputs for the model will come from interviewees in Pakistan. Our conceptualisation of corruption is that it is a social phenomenon, which involves public dealing in general, manifested as a social system of corruption is that that affects all other systems in one way or another. This study is about general perceptions of corruption rather than specific instances, because we are building a country wide model.

Each interview will take about 1 hour to 1½ hours and would be conducted at any suitable time at your preferred place. Therefore, I invite you to participate in this research activity which is a part of my PhD study. If we are unable to meet face to face, I would like to conduct a telephone interview or send you questions by email. If we meet face to face, I would like to audio-tape the interview. If at any time in the interview you feel uncomfortable, you are entitled to ask for the tape to be turned off at any time without giving a reason.

There is a very small risk that during the interview the specific details that you provide might reveal your identity to if published. To combat this risk, we ensure that we will not be including any identification information that may allow you to be identified.

Participation in this research is voluntary and you may decline to take part without giving a reason. You may withdraw any or all information supplied at any time up to four weeks after the interview without giving a reason. Data about you will not be obtained from any third parties, nor will information about you be given to any third parties. Information will be derived from the data collected in such a way that individuals will not be identified. All data collected will be stored securely on University of Auckland premises, and will be destroyed by shredding or secure file erase after six years.

The information gathered in these interviews will be published in my Doctoral thesis. The information may also be included in published Journal articles and conference proceedings. You will be informed of any publications that result from this research and will be provided with a copy of the work if you request it. All individuals will be given pseudonyms in the research and any specific details that could potentially identify you as a participant will be removed. Transparency

International, Pakistan will act as a contact giving general information on corruption issues for interested participants.

If you agree to participate in this research, please indicate this by filling in a Consent Form.

Thank you very much for your time and help in making this study possible. If you have any queries or wish to know more please phone me on the number given below or write to me at:

**Contact Details in New Zealand:** Muhammad Aman Ullah, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Email: m.aman@auckland.ac.nz, Phone: (+64) 21 264 5012

Contact information for my supervisor, Head of Department and the University of Auckland Human Subjects Ethics committee is provided below.

**Supervisor's Contact Details:** Dr. Tiru Arthanari, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel. (+64) 9 373-7599 extn. 84857,

**Head of Department's Contact Details:** Prof. Michael Myers, Department of Information Systems and Operations Management, The University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142, New Zealand. Tel. (+64) 9 373-7599 extn. 87468

**Contact Details of Transparency International, Pakistan Chapter:** Chairman / Executive Director, Transparency International, Pakistan Chapter, 5-C, 2nd Floor, Khayaban-e-Ittehad, Phase VII, D.H.A., Karachi. Telephone: (+92) 21 5390408-9 and (+92) 21 5311777, Web address: www.transparency.org.pk

This survey is approved by the human ethics committee of the University of Auckland. In case of any enquiries you may contact:

The Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Level 3, 76 Symonds Street, Private Bag 92019, Auckland, New Zealand. Tel. (+64) 9 3737599 extn 83711

If you are willing to participate in the survey and/or have any queries, please feel free to contact me. My contact details are as under:

**Contact Details in Pakistan:** Muhammad Aman Ullah, House No. 133, Street No. 85, Sector: G-9/4, Islamabad, Pakistan. Email: m.aman@auckland.ac.nz, Tel: ++92 300 532 5592.

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON  8/04/2009  for  3  years on  XXX , Reference Number  2009 / 010 .

## Appendix IV – Consent Form



### DEPARTMENT OF INFORMATION SYSTEMS AND OPERATIONS MANAGEMENT

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142. New Zealand

### CONSENT FORM FOR THE HEAD OF ORGANISATION

#### THIS CONSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

**Project Title: Using a Systems Approach to Investigate Perceptions of Corruption.**

**Researcher: Muhammad Aman Ullah**

This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA). Each interview will take about 1 hour to 1½ hours.

I confirm that participation or non-participation of employees will not affect their relationship or employment status with the organisation in any way.

I have been given and have understood an explanation of the research project. I have had an opportunity to ask questions and these have been answered to my satisfaction.

- I understand that the outcome of the study will be used for this PhD research, and academic publications arising from this research project. The identity of individuals will not be revealed.
- I also understand that audio recordings of the interviews may be taken. I know that participant can ask for the recorder to be stopped at any time without giving reason.
- Participants can withdraw the information provided within four weeks after the interview.

I understand that all information gathered, including consent form, audio tape and any transcripts, will be separated and securely stored on university premises, and destroyed after six years.

I agree/do not agree that the researcher may access the employees of my organisation.

**Name of participant:** \_\_\_\_\_

**Name of the Organisation:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON  8/04/2009  for  3  years on  XXX , Reference Number  2009 / 010 .



**DEPARTMENT OF INFORMATION SYSTEMS AND  
OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

**CONSENT FORM FOR PARTICIPANT  
THIS CONSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS  
(Government Official)**

**Title: Using a Systems Approach to Investigate Perceptions of Corruption.**

**Researcher: Muhammad Aman Ullah**

This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA). Each interview will take about 1 hour to 1½ hours.

- I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered.
- I understand that I may withdraw myself or any information traceable to me at any time up to four weeks from the date of the interview without giving a reason.
- I also understand that audio recordings of the interviews may be taken. I know that I can ask for the recorder to be stopped at any time without giving reason.
- I agree to participate in the research project titled "Using a Systems Approach to Investigate Perceptions of Corruption."
- I agree / do not agree to be audio-taped.
- I wish / do not wish copy of findings.

**Name of participant:** \_\_\_\_\_

**Name of the Organisation:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON  8/04/2009  for  3  years on  XXX , Reference Number  2009 / 010 .



**DEPARTMENT OF INFORMATION SYSTEMS AND OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142. New Zealand

**CONSENT FORM FOR PARTICIPANT**  
**THIS CONSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS**  
**(Donor Agency)**

**Title: Using a Systems Approach to Investigate Perceptions of Corruption.**

**Researcher: Muhammad Aman Ullah**

This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA). Each interview will take about 1 hour to 1½ hours.

- I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered.
- I understand that I may withdraw myself or any information traceable to me at any time up to four weeks from the date of the interview without giving a reason.
- I also understand that audio recordings of the interviews may be taken. I know that I can ask for the recorder to be stopped at any time without giving reason.
- I also understand that an assurance has been obtained that participation or non-participation of employees will not affect their relationship or employment status with the organisation in any way.
- I agree to participate in the research project titled "Using a Systems Approach to Investigate Perceptions of Corruption."
- I agree / do not agree to be audio-taped.
- I wish / do not wish copy of findings.

**Name of participant:** \_\_\_\_\_

**Name of the Organisation:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 8/04/2009 for 3 years on XXX, Reference Number 2009/\_010\_.



**DEPARTMENT OF INFORMATION SYSTEMS AND OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

**CONSENT FORM FOR PARTICIPANT  
THIS CONSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS  
(Non-Governmental Organisation)**

**Title: Using a Systems Approach to Investigate Perceptions of Corruption.**

**Researcher: Muhammad Aman Ullah**

This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA). Each interview will take about 1 hour to 1½ hours.

- I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered.
- I understand that I may withdraw myself or any information traceable to me at any time up to four weeks from the date of the interview without giving a reason.
- I also understand that audio recordings of the interviews may be taken. I know that I can ask for the recorder to be stopped at any time without giving reason.
- I also understand that an assurance has been obtained that participation or non-participation of employees will not affect their relationship or employment status with the organisation in any way.
- I agree to participate in the research project titled "Using a Systems Approach to Investigate Perceptions of Corruption."
- I agree / do not agree to be audio-taped.
- I wish / do not wish copy of findings.

**Name of participant:** \_\_\_\_\_

**Name of the Organisation:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON  8/04/2009  for  3  years on  XXX , Reference Number  2009 / \_010\_ .



**DEPARTMENT OF INFORMATION SYSTEMS AND  
OPERATIONS MANAGEMENT**

Owen G Glenn Building  
12 Grafton Road  
Auckland, New Zealand  
Telephone 64 9 373 7599  
Facsimile 64 9 3737430  
The University of Auckland  
Private Bag 92019  
Auckland Mail Centre  
Auckland 1142, New Zealand

**CONSENT FORM FOR PARTICIPANT**

**THIS CONSENT FORM WILL BE HELD FOR A PERIOD OF SIX YEARS**

**(Citizen)**

**Title: Using a Systems Approach to Investigate Perceptions of Corruption.**

**Researcher: Muhammad Aman Ullah**

This research project is financed by New Zealand Postgraduate Study Abroad Awards (NZPSAA). Each interview will take about 1 hour to 1½ hours.

- I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered.
- I understand that I may withdraw myself or any information traceable to me at any time up to four weeks from the date of the interview without giving a reason.
- I also understand that audio recordings of the interviews may be taken. I know that I can ask for the recorder to be stopped at any time without giving reason.
- I agree to participate in the research project titled "Using a Systems Approach to Investigate Perceptions of Corruption."
- I agree / do not agree to be audio-taped.
- I wish / do not wish copy of findings.

**Name of participant:** \_\_\_\_\_

**Name of the Organisation:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON 8/04/2009 for 3 years on XXX, Reference Number 2009/\_010\_.

## Appendix V – Behavioural Types

### Exponential Growth

Reinforcing feedback loop leads to exponential growth. The increase (or decrease) in the independent variable reinforce the increase (or decrease) in the dependent variable, whose outcome results in further increase (or decrease) of the independent variable, and so on. The result is a fast-growing variable in the exponential form. Typical example of this behaviour is the growth rate of Gross Domestic Product in this study.

### Goal Seeking

The state of the system is compared to a goal. The gap between them triggers corrective action in the attempt to achieve the target and take the system as close as possible to it. Balancing feedback loop maintains the equilibrium of the system and is responsible for the corrective actions in a goal seeking behaviour. Example of this behaviour is change in distribution of income in economic system.

### Oscillation

Oscillation is a type of behaviour very similar to goal seeking as explained above (also a balancing loop). The main difference is the presence of delays in the loops that structure the system. The later the action either in comparing the state against the goal, taking corrective action or changing system state, the higher the chances to over or underestimation results of the system. This causes overreaction and consequent oscillation of the state of system. Inflation rate seems to be good example of this kind of behaviour in the system.

### S-shaped Growth

This behaviour represents the existence of limitations or restrictions to everlasting growth (or decrease), very common in complex real world. Any growth, given by reinforcing feedback loops, reduces its pace according to the resources available for its continuation. The depletion of resources balances (or refrains) the growth rate to a minimum, in a balancing feedback loop, keeping the system at the limit defined by the availability of resources. This combination of reinforcing and balancing loops shapes the graph of this type of system, originating its notation as “S-shaped”.

### S-shaped Growth with Overshoot

In an analogy to the differences of Goal Seeking and Oscillation, the difference between this behaviour and S-shaped growth is the delay in the system for the identification that resources are reaching to a limit. The late correction of the growth pace and its comparison to resources' availability lead to overreaction in actions taken to allow or limit growth. Overshooting is the result, with a trend of oscillation around resources' limits, which in this case are fixed. Again, this is a

combination of reinforcing feedback loops and balancing loops, but the later presents delays in their causal interactions.

### **Overshoot and collapse**

This behaviour is a special case of S-shaped and Overshoot. In the later, resources are fixed, so the system seeks for the limit as it grows. However, in some cases resources are consumed as system uses them to grow. That leads to a pick of the system until the limits of resources are reached (overshoot), but afterwards to a sharp decay (collapse) of its state to a level at minimum resources' availability.

## Appendix VI – Causal Relationships of the Variables

S. No	Variable 1	Causality (+/—)	Variable 2	Source
1.	Bureaucratic quality	—	Corruption	Mauro 1995
2.	Bureaucratic quality	+	Level of GDP	Treisman 2000
3.	Bureaucratic quality	+	Service delivery	Thematic Analysis
4.	Calls for anti-corruption measures	+	Law and order	Thematic Analysis
5.	Control over appointments by influentials	+	Jobs in the government	Cobb and Gonzalez 2005
6.	Control over appointments by influentials	—	Law and order	Thematic Analysis
7.	Corruption	—	Economic openness	Dudley 2000
8.	Corruption	+	Effects of corruption	Dudley 2000
9.	Corruption	—	Governance	Kaufmann et al. 2003
10.	Corruption	—	Government expenditure	Treisman 2000
11.	Corruption	—	Law and order	Mauro 1995
12.	Corruption	+	Peoples attitude against corruption	Thematic Analysis
13.	Corruption	+	Poverty/Income inequality	Ullah and Ahmed 2006
14.	Corruption	—	Transparency in international negotiations	Buscaglia and Dijk 2003
15.	Corruption	+	Underground economy	Treisman 2000
16.	Democratic accountability	—	Corruption	Mauro 1995
17.	Economic openness	+	Level of GDP	Dudley 2000
18.	Effects of corruption	+	Calls for anti-corruption measures	Thematic Analysis
19.	Governance	+	International funding	Thematic Analysis
20.	Government expenditure	+	Level of GDP	Treisman 2000

S. No	Variable 1	Causality (+/—)	Variable 2	Source
21.	Government expenditure	+	Service delivery	Tanzi and Davoodi 1997
22.	Government revenue	+	Level of GDP	Treisman 2000
23.	Government revenue	+	Salary level	Buscaglia and Dijk 2003
24.	Government stability	+	Democratic accountability	Thematic Analysis
25.	Inappropriate recruitment	+	Corruption	Cobb and Gonzalez 2005
26.	Inappropriate recruitment	+	Underground economy	Cobb and Gonzalez 2005
27.	Inflation	+	Corruption	Thematic Analysis
28.	Inflation	—	Socioeconomic condition	Andvig et al. 2000
29.	Internal conflicts	—	Governance	Thematic Analysis
30.	Internal conflicts	—	Socioeconomic condition	Thematic Analysis
31.	International funding	+	Government revenue	Marcus and Kathleen 2007
32.	Jobs in the government	+	Inappropriate recruitment	Cobb and Gonzalez 2005
33.	Law and order	+	Level of GDP	Ullah and Ahmed 2006
34.	Law and order	—	Organised crime	Thematic Analysis
35.	Level of GDP	—	Inflation	Bardhan 1997
36.	Military in politics	—	Democratic accountability	Thematic Analysis
37.	Moral values	—	Organised crime	Thematic Analysis
38.	Organised crime	+	Corruption	Buscaglia and Dijk 2003
39.	Payments to influentials	+	Corruption	Cobb and Gonzalez 2005
40.	Payments to influentials	+	Control over appoints by influentials	Cobb and Gonzalez 2005
41.	Peoples attitude against corruption	+	Law and order	Thematic Analysis
42.	Poverty/Income Inequality	+	Corruption	Tanzi and Davoodi 1997

S. No	Variable 1	Causality (+/—)	Variable 2	Source
43.	Poverty/Income Inequality	+	Social exclusion	Tanzi and Davoodi 1997
44.	Religious values	+	Moral values	Alam 1989
45.	Religious values	+	Trust	Alam 1989
46.	Salary level	—	Corruption	Cobb and Gonzalez 2005
47.	Service delivery	+	Socioeconomic conditions	Thematic Analysis
48.	Social exclusion	—	Moral values	Thematic Analysis
49.	Socioeconomic conditions	—	Poverty/Income inequality	Andvig et al. 2000
50.	Transparency in international negotiations	+	International funding	Cobb and Gonzalez 2005
51.	Trust	+	Government revenue	Thematic Analysis
52.	Underground economy	—	Government revenue	Andvig et al. 2000

**Table A5.1: Causal Relationships of the Variables and their Source**

## Appendix VII – Transformation of Causal Loop Diagram into Stock and Flow Diagram

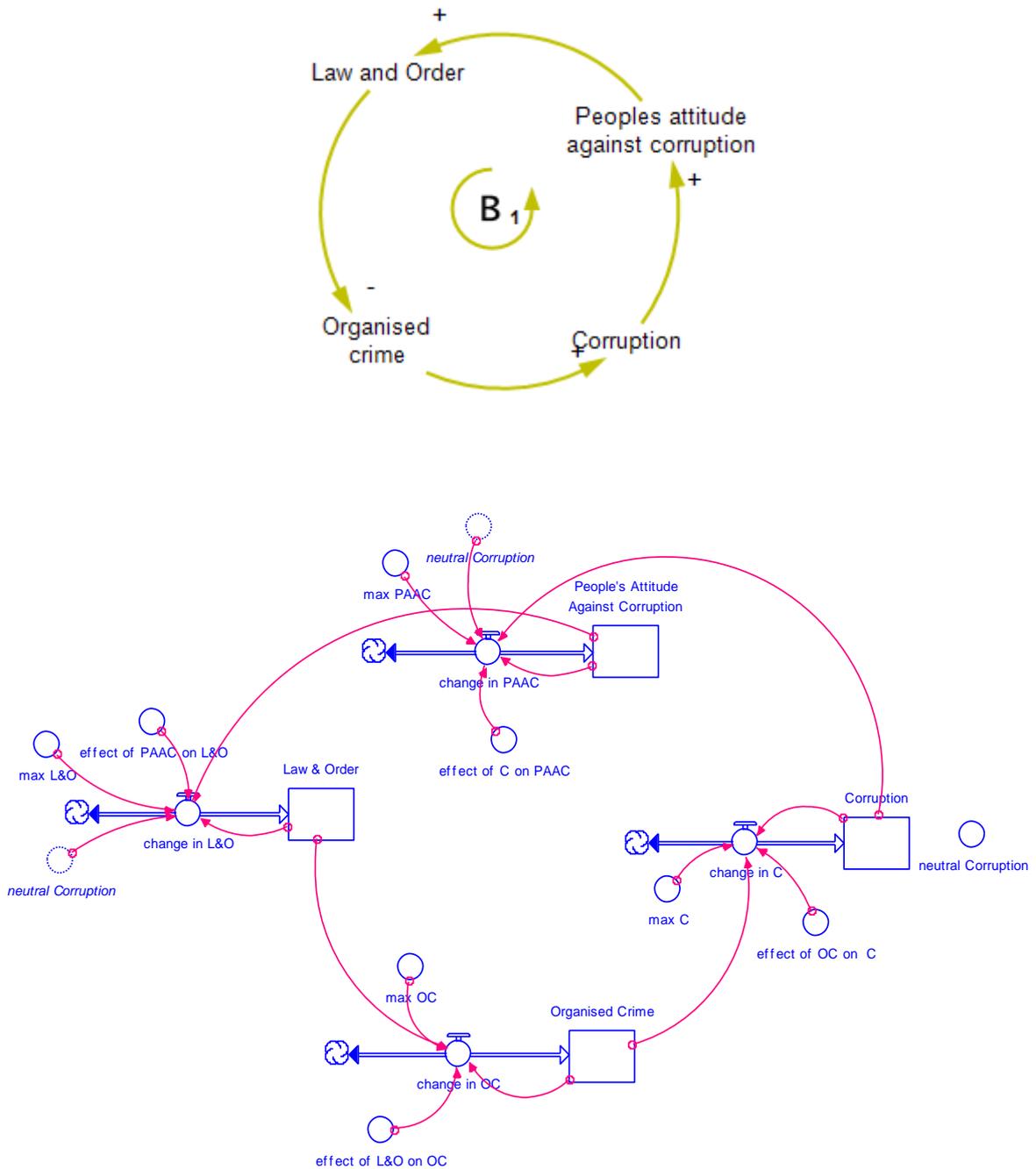


Figure A5.1: Feedback Loop B<sub>1</sub>

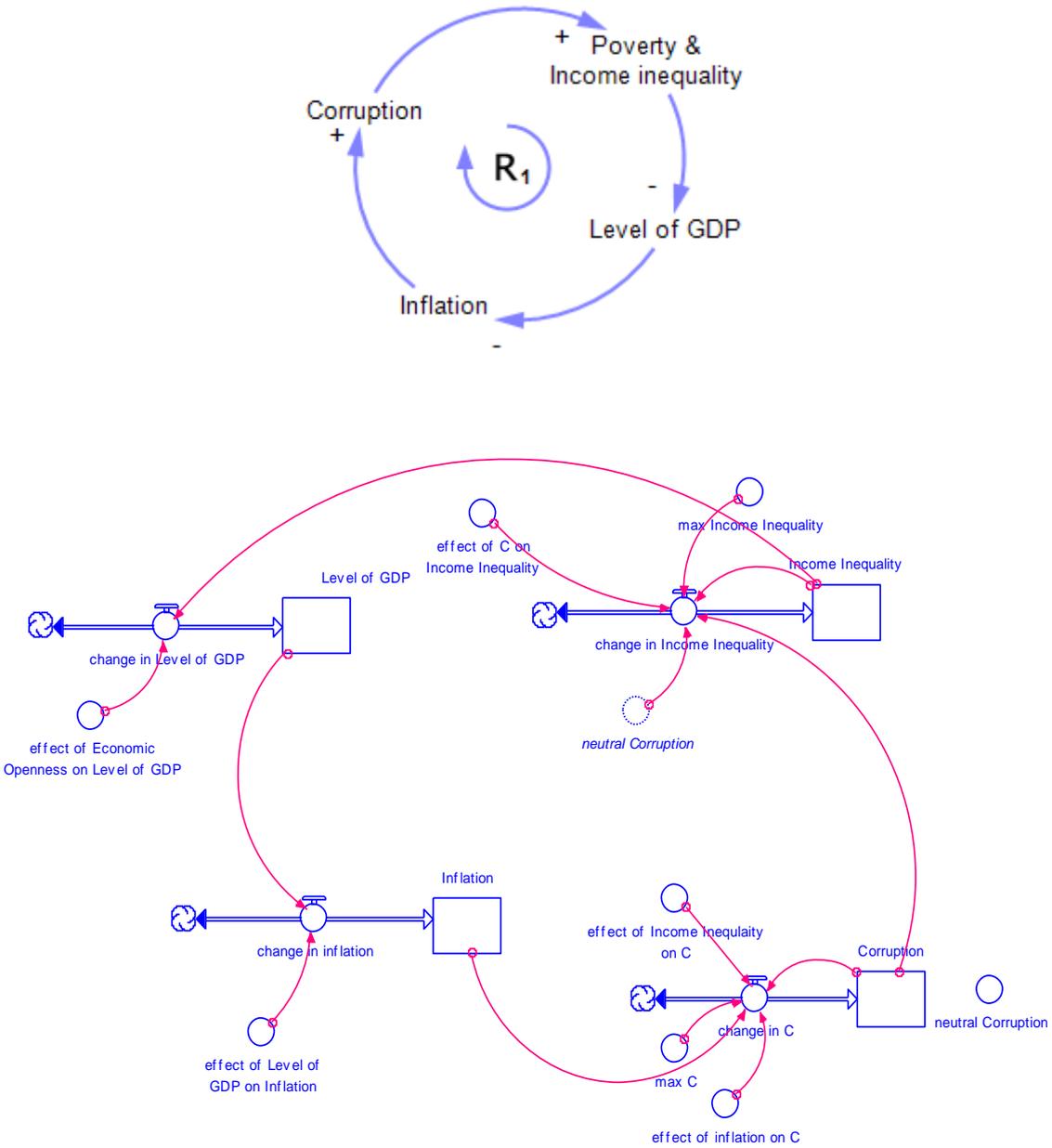
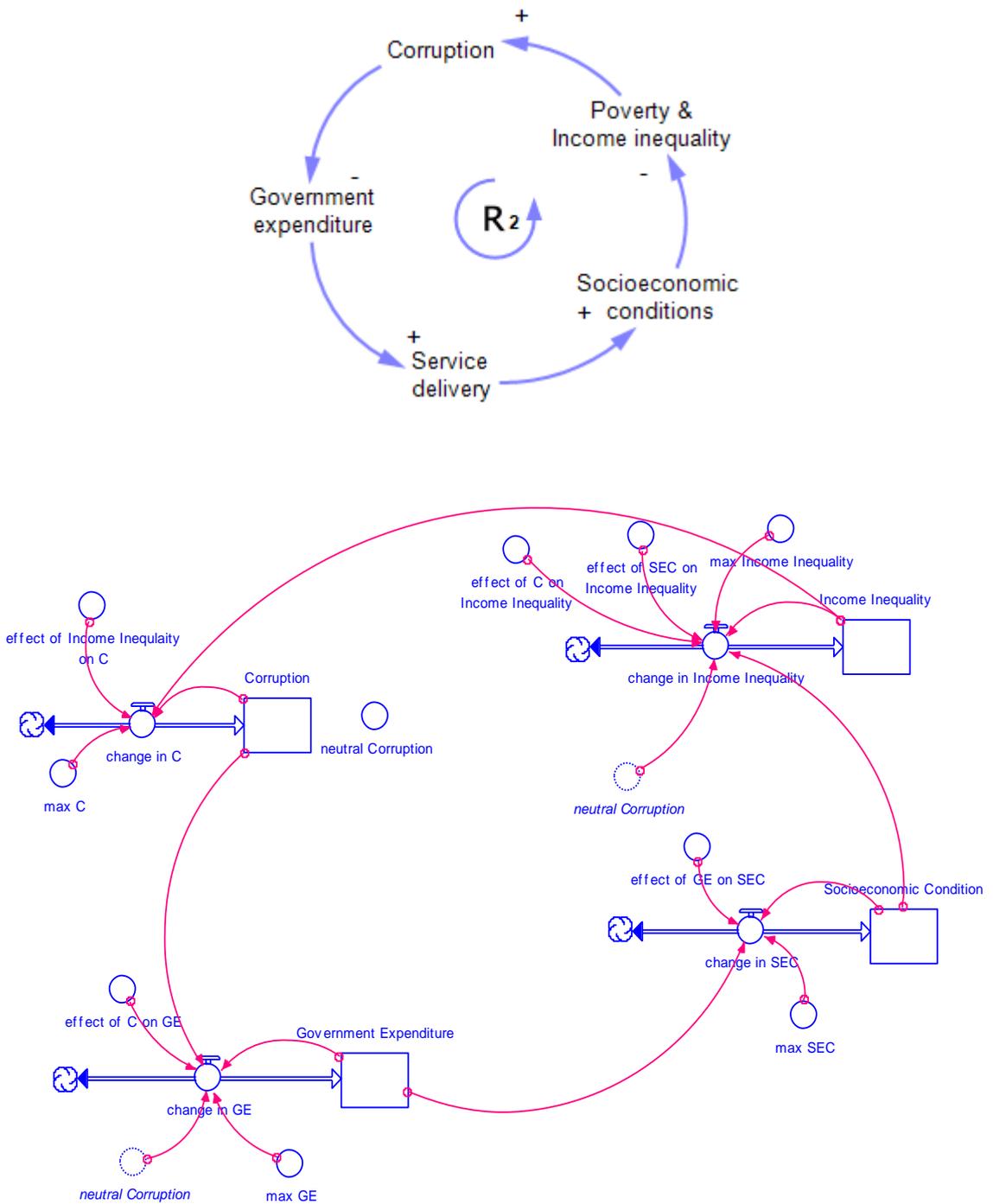


Figure A5.2: Feedback Loop R<sub>1</sub>



**Figure A5.3: Feedback Loop R<sub>2</sub>**

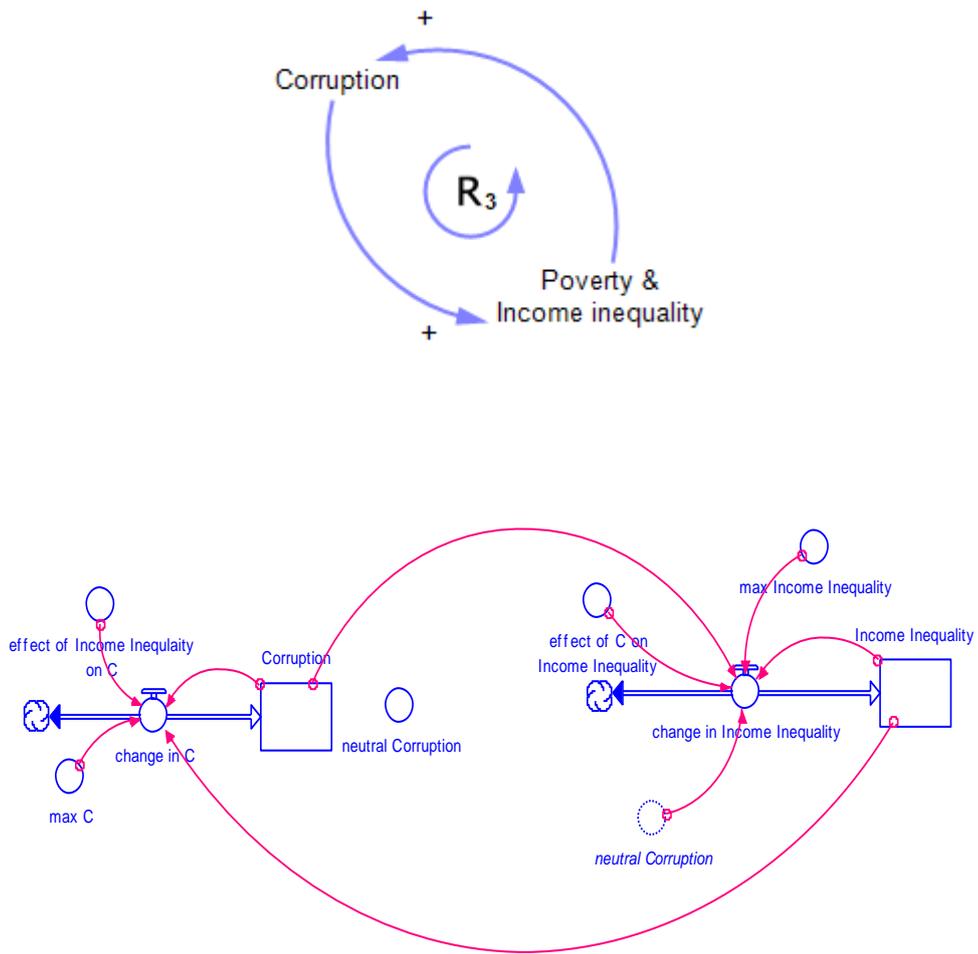


Figure A5.4: Feedback Loop R<sub>3</sub>

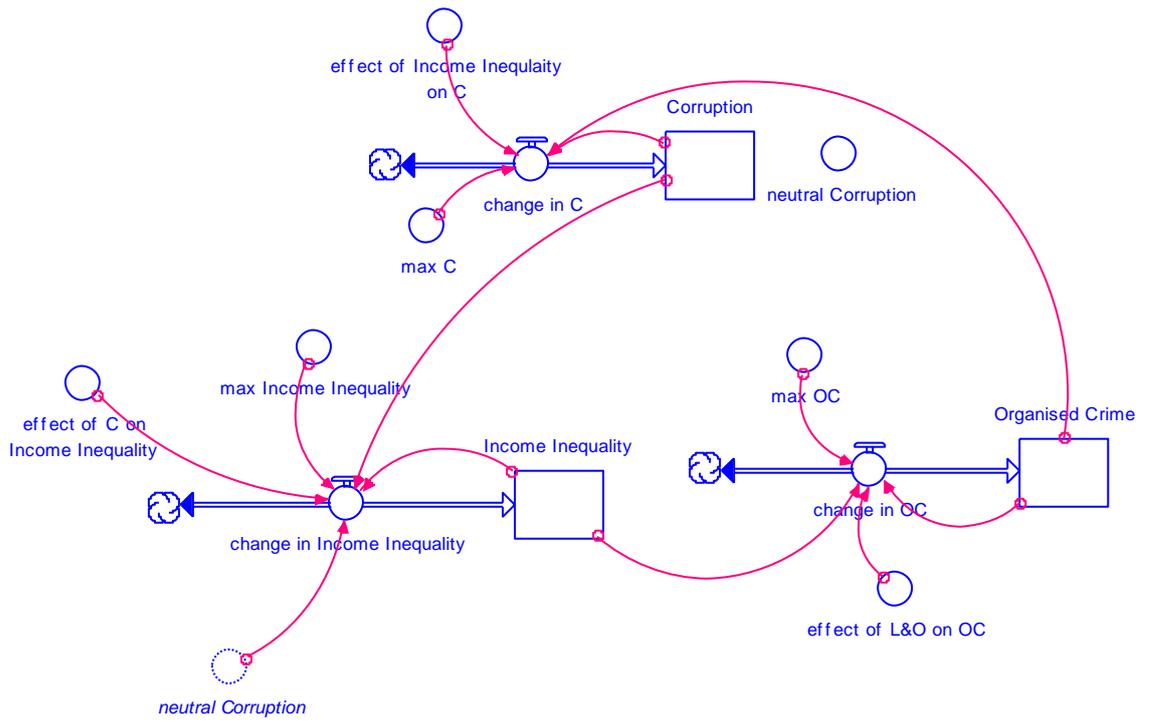
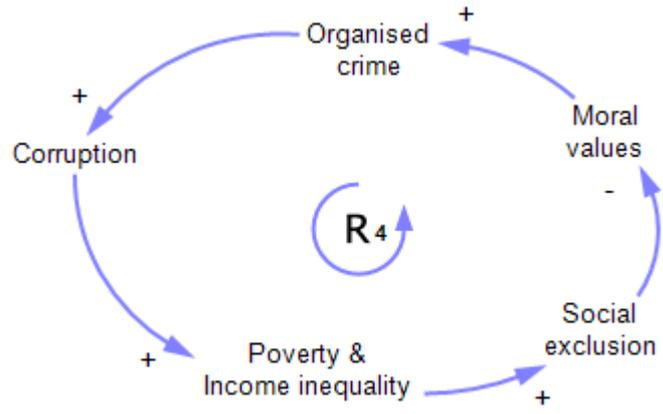
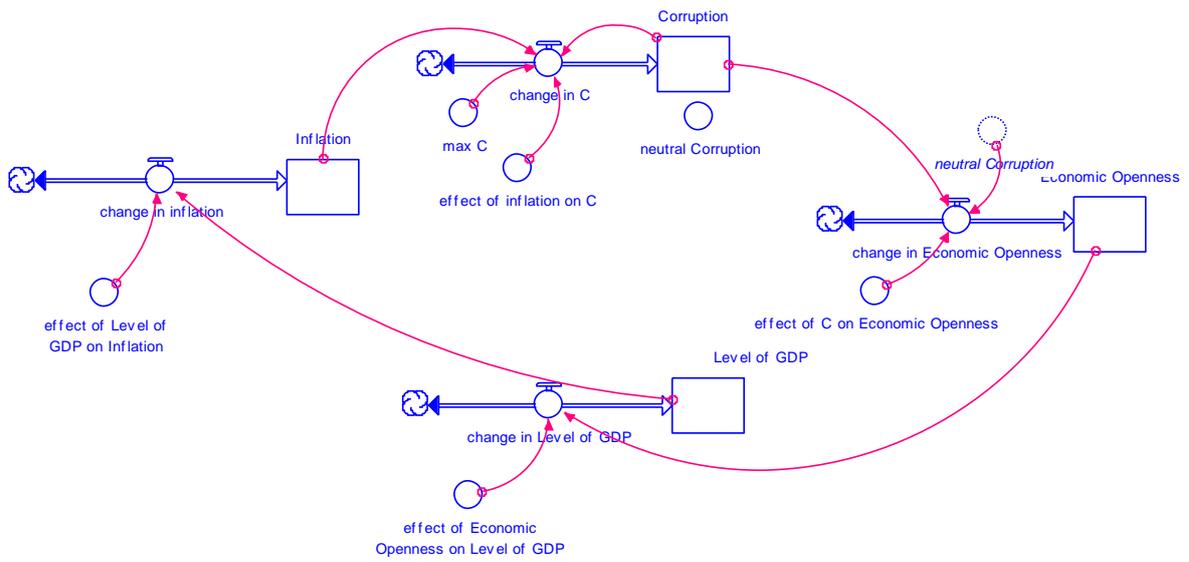
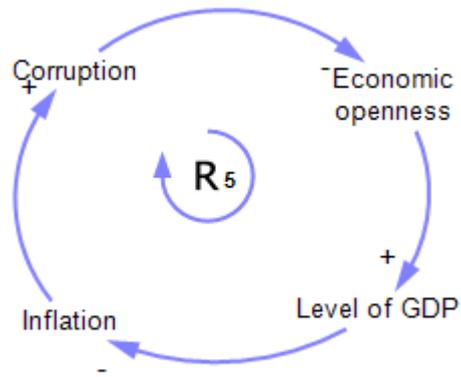


Figure A5.5: Feedback Loop R<sub>4</sub>



**Figure A5.6: Feedback Loop R<sub>5</sub>**

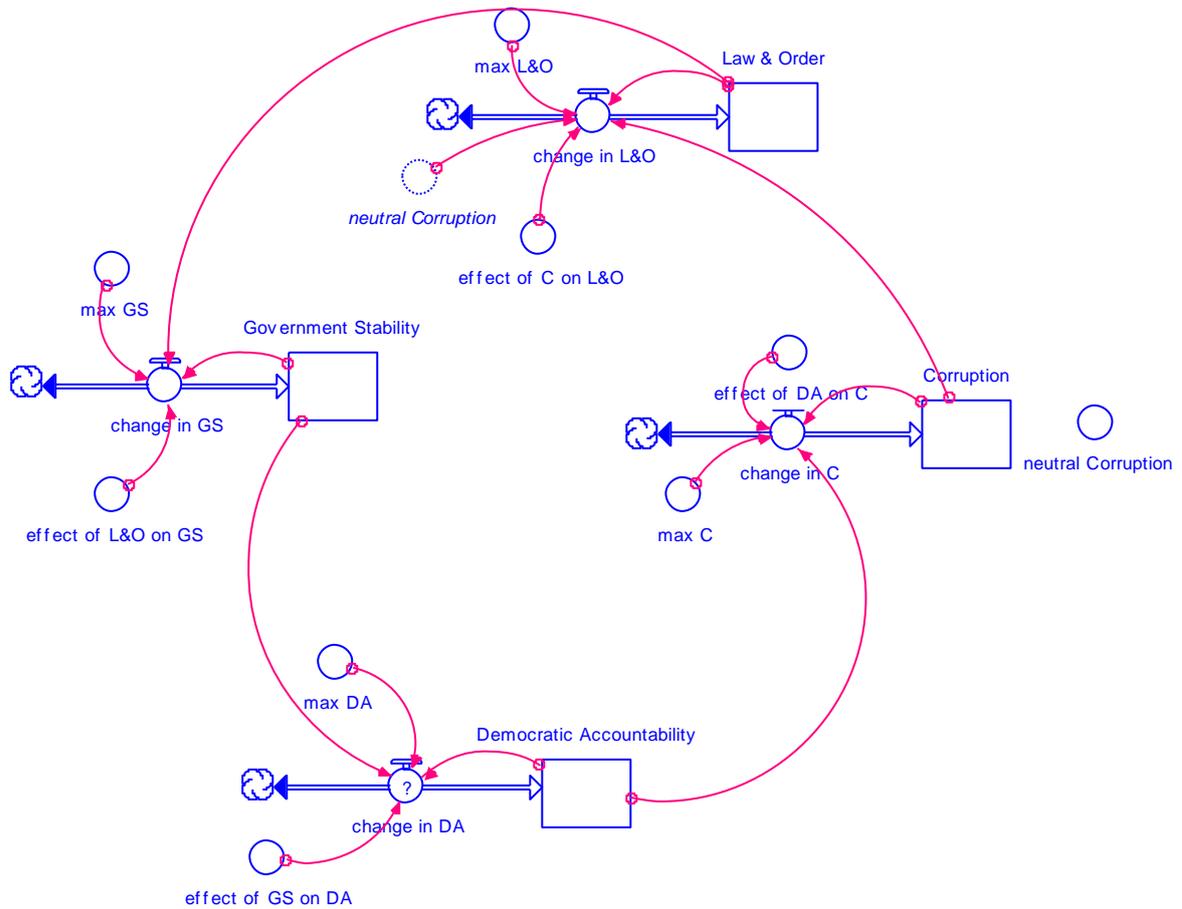
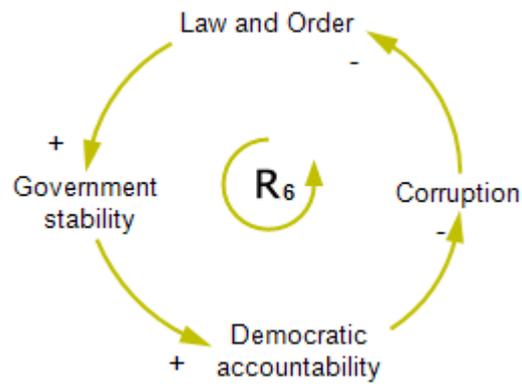


Figure A5.7: Feedback Loop  $R_6$

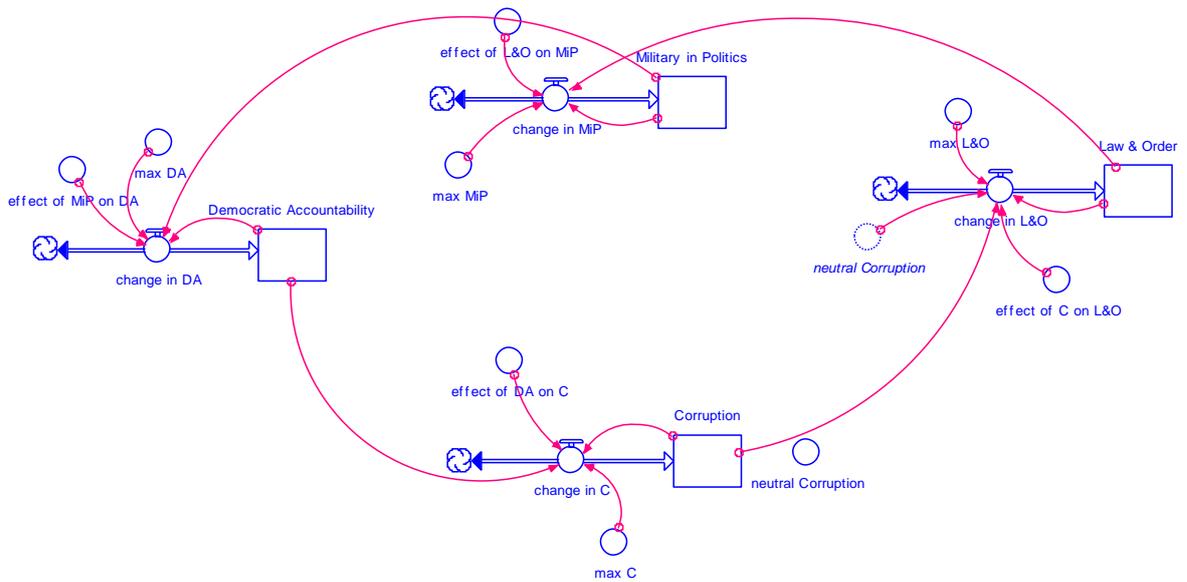
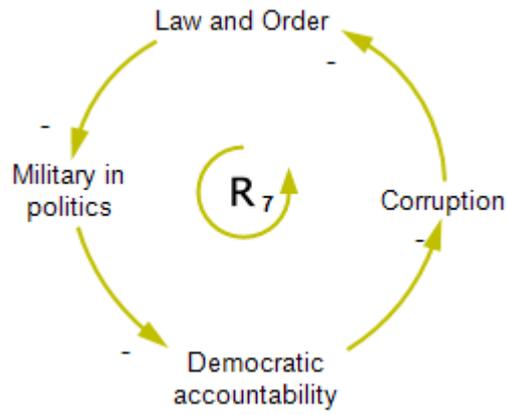


Figure A5.8: Feedback Loop  $R_7$

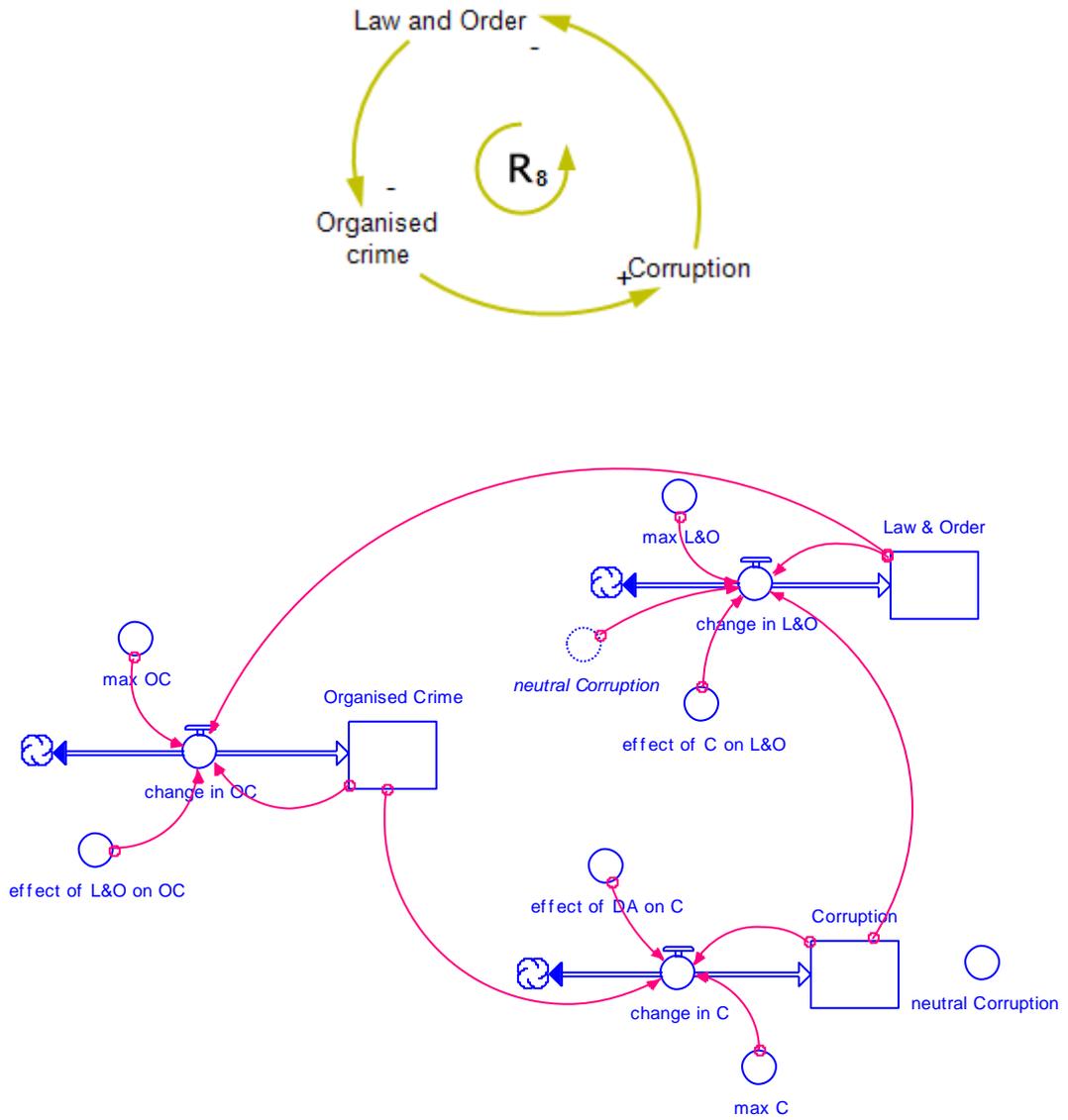


Figure A5.9: Feedback Loop  $R_8$

## Appendix VIII – Definition of ICRG Indices

### Government Stability – 12 Points

This is an assessment both of the government's ability to carry out its declared program(s), and its ability to stay in office. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk.

*The subcomponents are:*

- Government Unity
- Legislative Strength
- Popular Support

### Socioeconomic Conditions – 12 Points

This is an assessment of the socioeconomic pressures at work in society that could constrain government action or fuel social dissatisfaction. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk.

*The subcomponents are:*

- Unemployment
- Consumer Confidence
- Poverty

### Internal Conflict – 12 Points

This is an assessment of political violence in the country and its actual or potential impact on governance. The highest rating is given to those countries where there is no armed or civil opposition to the government and the government does not indulge in arbitrary violence, direct or indirect, against its own people. The lowest rating is given to a country embroiled in an on-going civil war. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk.

*The subcomponents are:*

- Civil War/Coup Threat
- Terrorism/Political Violence
- Civil Disorder

### External Conflict – 12 Points

The external conflict measure is an assessment both of the risk to the incumbent government from foreign action, ranging from non-violent external pressure (diplomatic pressures, withholding of aid, trade restrictions, territorial disputes, sanctions, etc) to violent external pressure (cross-border conflicts to all-out war).

External conflicts can adversely affect foreign business in many ways, ranging from restrictions on operations to trade and investment sanctions, to distortions in the allocation of economic resources, to violent change in the structure of society.

The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk.

*The subcomponents are:*

- War
- Cross-Border Conflict
- Foreign Pressures

### **Corruption – 6 Points**

This is an assessment of corruption within the political system. Such corruption is a threat to foreign investment for several reasons: it distorts the economic and financial environment; it reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability; and, last but not least, introduces an inherent instability into the political process.

The most common form of corruption met directly by business is financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. Such corruption can make it difficult to conduct business effectively, and in some cases may force the withdrawal or withholding of an investment.

Although our measure takes such corruption into account, it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favor-for-favours', secret party funding, and suspiciously close ties between politics and business. In our view these insidious sorts of corruption are potentially of much greater risk to foreign business in that they can lead to popular discontent, unrealistic and inefficient controls on the state economy, and encourage the development of the black market.

The greatest risk in such corruption is that at some time it will become so overweening, or some major scandal will be suddenly revealed, as to provoke a popular backlash, resulting in a fall or overthrow of the government, a major reorganising or restructuring of the country's political institutions, or, at worst, a breakdown in law and order, rendering the country ungovernable.

### **Military in Politics – 6 Points**

The military is not elected by anyone. Therefore, its involvement in politics, even at a peripheral level, is a diminution of democratic accountability. However, it also has other significant implications.

The military might, for example, become involved in government because of an actual or created internal or external threat. Such a situation would imply the distortion of government policy in order to meet this threat, for example by increasing the defense budget at the expense of other budget allocations.

In some countries, the threat of military take-over can force an elected government to change policy or cause its replacement by another government more amenable to the military's wishes. A military takeover or threat of a takeover may also represent a high risk if it is an indication that the government is unable to function effectively and that the country therefore has an uneasy environment for foreign businesses.

A full-scale military regime poses the greatest risk. In the short term a military regime may provide a new stability and thus reduce business risks. However, in the longer term the risk will almost certainly rise, partly because the system of governance will become corrupt and partly because the continuation of such a government is likely to create an armed opposition.

In some cases, military participation in government may be a symptom rather than a cause of underlying difficulties. Overall, lower risk ratings indicate a greater degree of military participation in politics and a higher level of political risk.

#### **Religious Tensions – 6 Points**

Religious tensions may stem from the domination of society and/or governance by a single religious group that seeks to replace civil law by religious law and to exclude other religions from the political and/or social process; the desire of a single religious group to dominate governance; the suppression of religious freedom; the desire of a religious group to express its own identity, separate from the country as a whole.

The risk involved in these situations range from inexperienced people imposing inappropriate policies through civil dissent to civil war.

#### **Law and Order – 6 Points**

Law and Order are assessed separately, with each sub-component comprising zero to three points. The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law. Thus, a country can enjoy a high rating – 3 – in terms of its judicial system, but a low rating – 1 – if it suffers from a very high crime rate or if the law is routinely ignored without effective sanction (for example, widespread illegal strikes).

#### **Ethnic Tensions – 6 Points**

This component is an assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise. Higher ratings are given to countries where tensions are minimal, even though such differences may still exist.

#### **Democratic Accountability – 6 Points**

This is a measure of how responsive government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic one.

The points in this component are awarded on the basis of the type of governance enjoyed by the country in question. For this purpose, we have defined the following types of governance:

### **Alternating Democracy**

The essential features of an alternating democracy are:

- A government/executive that has not served more than two successive terms,
- Free and fair elections for the legislature and executive as determined by constitution or statute,
- The active presence of more than one political party and a viable opposition,
- Evidence of checks and balances among the three elements of government: executive, legislative and judicial,
- Evidence of an independent judiciary,
- Evidence of the protection of personal liberties through constitutional or other legal guarantees.

### **Dominated Democracy**

The essential features of a dominated democracy are:

- A government/executive that has served more than two successive terms,
- Free and fair elections for the legislature and executive as determined by constitution or statute,
- The active presence of more than one political party,
- Evidence of checks and balances between the executive, legislature, and judiciary,
- Evidence of an independent judiciary,
- Evidence of the protection of personal liberties.

### **De Facto One-Party State**

The essential features of a de facto one-party state are:

- A government/executive that has served more than two successive terms, or where the political/electoral system is designed or distorted to ensure the domination of governance by a particular government/executive,
- Holding of regular elections as determined by constitution or statute,
- Evidence of restrictions on the activity of non-government political parties (disproportionate media access between the governing and non-governing parties, harassment of the leaders and/or supporters of non-government political parties, the creation of impediments and obstacles affecting only the non-government political parties, electoral fraud, etc).

### **De Jure One-Party State**

The identifying feature of a one-party state is:

- A constitutional requirement that there be only one governing party,
- Lack of any legally recognised political opposition.

### **Autarchy**

The identifying feature of an autarchy is:

- Leadership of the state by a group or single person, without being subject to any franchise, either through military might or inherited right.

In an autarchy, the leadership might indulge in some quasi-democratic processes. In its most developed form this allows competing political parties and regular elections, through popular franchise, to an assembly with restricted legislative powers (approaching the category of a de jure or de facto one-party state). However, the defining feature is whether the leadership, i.e. the head of government, is subject to election in which political opponents are allowed to stand.

In general, the highest number of risk points (lowest risk) is assigned to Alternating Democracies, while the lowest number of risk points (highest risk) is assigned to Autarchies.

#### **Bureaucracy Quality – 4 Points**

The institutional strength and quality of the bureaucracy is another shock absorber that tends to minimise revisions of policy when governments change. Therefore, high points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.

## Appendix IX – Equations of System Dynamics Model

Corruption(t) = Corruption(t - dt) + (change\_in\_C) \* dt

INIT Corruption = 2

UNITS: Dmnl

DOCUMENT: A score of 6 points equates to Very Low Corruption Level and a score of 0 points to Very High Corruption Level

The initial value in 1984 was 2 in Pakistan for corruption index.

INFLOWS:

change\_in\_C = min((max\_C-  
Corruption),(Democratic\_Accountability\*effect\_of\_DA\_on\_C)+(effect\_of\_OC\_on\_C\*Organised\_Cr  
ime)+(Inflation\*effect\_of\_inflation\_on\_C)+(Income\_Inequality\*effect\_of\_Income\_\_Inequlaity\_on\_C)  
)

UNITS: dmnl/yr

Democratic\_Accountability(t) = Democratic\_Accountability(t - dt) + (change\_in\_DA) \* dt

INIT Democratic\_Accountability = 2.6

DOCUMENT: A score of 6 points equates to Very Low Risk and a score of 0 points to Very High Risk.

The initial value in 1984 was 2.6 in Pakistan for democratic accountability index.

INFLOWS:

change\_in\_DA = min((max\_DA-  
Democratic\_Accountability),(Government\_Stability\*effect\_of\_GS\_on\_DA)+(Military\_in\_Politics\*effe  
ct\_of\_MiP\_on\_DA))

Economic\_Openness(t) = Economic\_Openness(t - dt) + (change\_in\_Economic\_Openness) \* dt

INIT Economic\_Openness = 33.70

UNITS: Percent

DOCUMENT: This is the initial value of economic openness (as percent of GDP) in 1984.

INFLOWS:

change\_in\_Economic\_Openness = (Corruption-  
neutral\_Corruption)\*effect\_of\_C\_on\_Economic\_Openness

UNITS: percent/yr

Government\_Expenditure(t) = Government\_Expenditure(t - dt) + (change\_in\_GE) \* dt

INIT Government\_Expenditure = 12

UNITS: Percent

DOCUMENT: It shows the government expenditure as percent of GDP in 1984. The higher the percentage, government expenditure will be higher.

INFLOWS:

change\_in\_GE = min((max\_GE-Government\_Expenditure),(neutral\_Corruption-  
Corruption)\*effect\_of\_C\_on\_GE)

UNITS: percent/yr

$$\text{Government\_Stability}(t) = \text{Government\_Stability}(t - dt) + (\text{change\_in\_GS}) * dt$$

$$\text{INIT Government\_Stability} = 5.25$$

UNITS: Dmnl

DOCUMENT: A score of 12 points equates to Very Low Risk and a score of 0 points to Very High Risk.

The initial value in 1984 was 5.25 in Pakistan for government stability index.

INFLOWS:

$$\text{change\_in\_GS} = \min((\text{max\_GS} - \text{Government\_Stability}), (\text{Law\_ \& \_Order} * \text{effect\_of\_L\&O\_on\_GS}))$$

UNITS: dmnl/yr

$$\text{Income\_Inequality}(t) = \text{Income\_Inequality}(t - dt) + (\text{change\_in\_Income\_Inequality}) * dt$$

$$\text{INIT Income\_Inequality} = 34.50$$

UNITS: Dmnl

DOCUMENT: This stock is related to inequality measures such as the GINI index. For this model, 0 is equity or no income inequality. If the value is higher then it is worse (more inequality). In 1984, income inequality in Pakistan was 34.50.

INFLOWS:

$$\text{change\_in\_Income\_Inequality} = \min((\text{max\_Income\_Inequality} - \text{Income\_Inequality}), (\text{effect\_of\_SEC\_on\_Income\_Inequality} * \text{Socioeconomic\_Condition}) + (\text{Corruption} - \text{neutral\_Corruption}) * \text{effect\_of\_C\_on\_Income\_Inequality})$$

UNITS: dmnl/yr

$$\text{Inflation}(t) = \text{Inflation}(t - dt) + (\text{change\_in\_inflation}) * dt$$

$$\text{INIT Inflation} = 6.09$$

UNITS: Percent

DOCUMENT: This stock is related to inflation measures such as the CPI index. For this model, 0 is no inflation in the country. As the value increases the inflation rate in the country also increases.

The initial value in 1984 is 6.09 per cent.

INFLOWS:

$$\text{change\_in\_inflation} = (\text{Level\_of\_GDP} * \text{effect\_of\_Level\_of\_GDP\_on\_Inflation})$$

UNITS: percent/yr

$$\text{Law\_ \& \_Order}(t) = \text{Law\_ \& \_Order}(t - dt) + (\text{change\_in\_L\&O}) * dt$$

$$\text{INIT Law\_ \& \_Order} = 2$$

UNITS: Dmnl

DOCUMENT: A score of 6 points equates to Very Low Risk and a score of 0 points to Very High Risk.

The initial value in 1984 was 2 in Pakistan for law and order index.

INFLOWS:

$$\text{change\_in\_L\&O} = \min((\text{max\_L\&O} - \text{Law\_ \& \_Order}), (\text{Corruption} - \text{neutral\_Corruption}) * \text{effect\_of\_C\_on\_L\&O} + \text{People's\_Attitude\_Against\_Corruption} * \text{effect\_of\_PAAC\_on\_L\&O})$$

UNITS: dmnl/yr

$$\text{Level\_of\_GDP}(t) = \text{Level\_of\_GDP}(t - dt) + (\text{change\_in\_Level\_of\_GDP}) * dt$$

$$\text{INIT Level\_of\_GDP} = 35.24$$

UNITS: US dollars per year (USD/yr)

DOCUMENT: This stock is related to economic development measures such as the Level of GDP.

The initial value in 1984 is 35.24 billion US dollars per year.

INFLOWS:

$$\text{change\_in\_Level\_of\_GDP} =$$

$$(\text{Economic\_Openness} * \text{effect\_of\_Economic\_Openness\_on\_Level\_of\_GDP})$$

UNITS: usd/yr<sup>2</sup>

$$\text{Military\_in\_Politics}(t) = \text{Military\_in\_Politics}(t - dt) + (\text{change\_in\_MiP}) * dt$$

$$\text{INIT Military\_in\_Politics} = 1$$

UNITS: Dmnl

DOCUMENT: A score of 6 points equates to Very Low Risk and a score of 0 points to Very High Risk.

The initial value in 1984 was 1 in Pakistan for military in politics index.

INFLOWS:

$$\text{change\_in\_MiP} = \min((\text{max\_MiP} - \text{Military\_in\_Politics}), (\text{Law\_ \& \_Order} * \text{effect\_of\_L\&O\_on\_MiP}))$$

UNITS: dmnl/yr

$$\text{Organised\_Crime}(t) = \text{Organised\_Crime}(t - dt) + (\text{change\_in\_OC}) * dt$$

$$\text{INIT Organised\_Crime} = 84.70$$

UNITS: Dmnl

DOCUMENT: 0 represent no crime rate in the country. 100 is the highest value which indicates high crime rate.

The initial value in 1984 was 84.70 in Pakistan for organised crime index.

INFLOWS:

$$\text{change\_in\_OC} = \min((\text{max\_OC} - \text{Organised\_Crime}), (\text{effect\_of\_L\&O\_on\_OC} * \text{Law\_ \& \_Order}))$$

UNITS: dmnl/yr

$$\text{People's\_Attitude\_Against\_Corruption}(t) = \text{People's\_Attitude\_Against\_Corruption}(t - dt) + (\text{change\_in\_PAAC}) * dt$$

$$\text{INIT People's\_Attitude\_Against\_Corruption} = 5$$

UNITS: Dmnl

DOCUMENT: This stock is related to PAAC index. It is assumed that in 1984, PAAC index in Pakistan was 5.

INFLOWS:

$$\text{change\_in\_PAAC} = \min((\text{max\_PAAC} - \text{People's\_Attitude\_Against\_Corruption}), (\text{Corruption-neutral\_Corruption}) * \text{effect\_of\_C\_on\_PAAC})$$

UNITS: dmnl/yr

$$\text{Socioeconomic\_Condition}(t) = \text{Socioeconomic\_Condition}(t - dt) + (\text{change\_in\_SEC}) * dt$$

INIT Socioeconomic\_Condition = 6.92

UNITS: Dmnl

DOCUMENT: This is the level social economic conditions, such as the GDP or other measures (note that a good GDP doesn't guarantee good social economic conditions such as income equality). 0 is worse socio economic conditions. 12 means socio economic conditions in the country are at best.

The initial value of this index in Pakistan in 1984 was 6.92.

INFLOWS:

change\_in\_SEC = min((max\_SEC - Socioeconomic\_Condition), (effect\_of\_GE\_on\_SEC \* Government\_Expenditure))

UNITS: dmnl/yr

effect\_of\_C\_on\_Economic\_Openness = 0.15

DOCUMENT: This represents the impact of corruption on economic openness, i.e. the higher the corruption value is, the more chances of deterioration in economic openness. The value of 0.15 represents the strength of this effect.

effect\_of\_C\_on\_GE = -0.0905

DOCUMENT: This represents the 'negative' impact of corruption on GE. The value of -0.0905 represents the strength of this effect.

effect\_of\_C\_on\_Income\_Inequality = -0.0058

DOCUMENT: This represents the impact of corruption on Income Inequality, i.e. the higher the corruption value is (low value of corruption index), the more chances of deterioration in income equality in the country. The value of -0.0058 represents the strength of this effect.

effect\_of\_C\_on\_L&O = 0.032

DOCUMENT: This represents the impact of corruption on law and order in the country, i.e. the higher the value of corruption index is, the law and order situation will be much better in the country. The value of 0.032 represents the strength of this effect.

effect\_of\_C\_on\_PAAC = -0.106

DOCUMENT: This represents the impact of corruption on PAAC, i.e. the higher the corruption is (low value of corruption index), the more strong will be the peoples attitude against corruption results. The value of -0.106 represents the strength of this effect.

effect\_of\_DA\_on\_C = 0.065

DOCUMENT: This represents the impact of democratic accountability on corruption level in the country, i.e. the higher the value of democratic accountability is, there will be less corruption in the country. The value of 0.065 represents the strength of this effect.

effect\_of\_Economic\_Openness\_on\_Level\_of\_GDP = 0.0723

DOCUMENT: This represents the 'poitive' impact of economic openness on Level of GDP. i.e., the higher the economic openness is, the more increase of level of GDP results. The value of 0.0723 represents the strength of this effect.

effect\_of\_GE\_on\_SEC = 0.00258

DOCUMENT: This represents the impact of GE on SEC, i.e. the higher the GE value is, the more chances of better socio economic conditions in the country. The value of 0.00258 represents the strength of this effect.

$$\text{effect\_of\_GS\_on\_DA} = 0.014$$

DOCUMENT: This represents the impact of government stability on democratic accountability in the country, i.e. the higher the value of GS index is, the democratic accountability will be much better in the country. The value of 0.014 represents the strength of this effect.

$$\text{effect\_of\_Income\_Inequality\_on\_C} = -0.00118$$

DOCUMENT: This represents the impact of income inequality (income distribution) on corruption level in the country, i.e. the higher the level of income inequality is, the corruption level will be higher in the country. The value of -0.00118 represents the strength of this effect.

$$\text{effect\_of\_inflation\_on\_C} = -0.00250$$

DOCUMENT: This represents the impact of inflation on corruption level in the country, i.e. the higher the value of inflation is, the corruption level will be higher in the country. The value of -0.00250 represents the strength of this effect.

$$\text{effect\_of\_L\&O\_on\_GS} = 0.028$$

DOCUMENT: This represents the impact of law and order on government stability, i.e. the higher the value of law and order index is, the more stable will be the government. The value of 0.028 represents the strength of this effect.

$$\text{effect\_of\_L\&O\_on\_MiP} = 0.0022$$

DOCUMENT: This represents the impact of law and order on military in politics, i.e. the higher the value of law and order index is, the less chances will be there for involvement of military in politics. The value of 0.0022 represents the strength of this effect.

$$\text{effect\_of\_L\&O\_on\_OC} = -0.030$$

DOCUMENT: This represents the impact of law and order on organised crime, i.e. the higher the value of law and order index is, the law and order situation will be good in the country. The value of -0.030 represents the strength of this effect.

$$\text{effect\_of\_Level\_of\_GDP\_on\_Inflation} = -0.00102$$

DOCUMENT: This represents the 'negative' impact of Level of GDP on inflation. i.e., the higher the Level of GDP is, the more reduction of inflation results. The value of 0.00102 represents the strength of this effect.

$$\text{effect\_of\_MiP\_on\_DA} = 0.0019$$

DOCUMENT: This represents the impact of military in politics on democratic accountability in the country, i.e. the higher the value of MiP index is, the democratic accountability will be deteriorated in the country. The value of 0.019 represents the strength of this effect.

$$\text{effect\_of\_OC\_on\_C} = -0.002$$

DOCUMENT: This represents the impact of organised crime on level of corruption in the country, i.e. the higher the value of organised crime index is, the corruption level will be much higher in the country. The value of -0.002 represents the strength of this effect.

$\text{effect\_of\_PAAC\_on\_L\&O} = 0.015$

DOCUMENT: This represents the impact of peoples attitude against corruption on law and order in the country, i.e. the higher the value of PAAC index is, the law and order situation will be much better in the country. The value of 0.015 represents the strength of this effect.

$\text{effect\_of\_SEC\_on\_Income\_Inequality} = -0.002$

DOCUMENT: This represents the impact of SEC on Income Inequality, i.e. the higher the SEC value is, the more chances of better income equality in the country. The value of -0.002 represents the strength of this effect.

$\text{max\_C} = 6$

DOCUMENT: The maximum value for corruption index is 6.

$\text{max\_DA} = 6$

DOCUMENT: The maximum value for democratic accountability index is 6.

$\text{max\_GE} = 100$

DOCUMENT: This is the maximum value for government expenditure (as percentage of GDP).

$\text{max\_GS} = 12$

DOCUMENT: The maximum value for GS index is 12.

$\text{max\_Income\_Inequality} = 100$

DOCUMENT: 100 is the maximum value for income inequality (GINI index).

$\text{max\_L\&O} = 6$

DOCUMENT: The maximum value for law and order index is 6.

$\text{max\_MiP} = 6$

DOCUMENT: The maximum value for MiP index is 6.

$\text{max\_OC} = 100$

UNITS: Dmnl

DOCUMENT: The maximum value for organised crime index is 100.

$\text{max\_PAAC} = 10$

DOCUMENT: The maximum value for PAAC index is 10.

$\text{max\_SEC} = 12$

DOCUMENT: The maximum value of SEC index is 12.

$\text{neutral\_Corruption} = 4$

## Appendix X – System Dynamics Model at Equilibrium

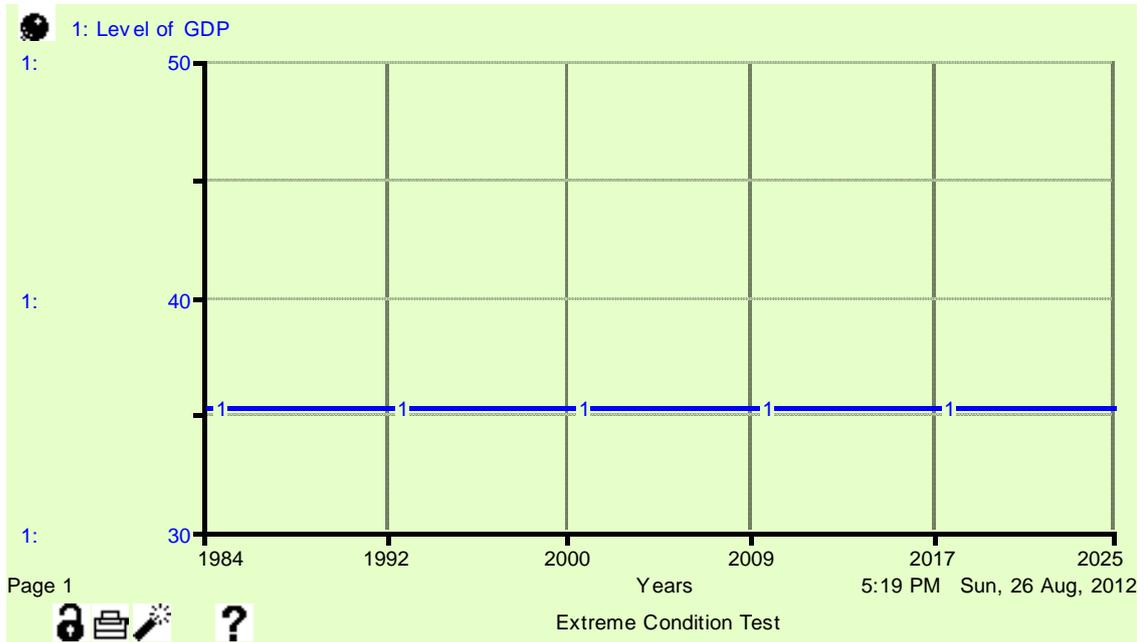


Figure A5.10: System Dynamics Model at Equilibrium (Level of GDP)

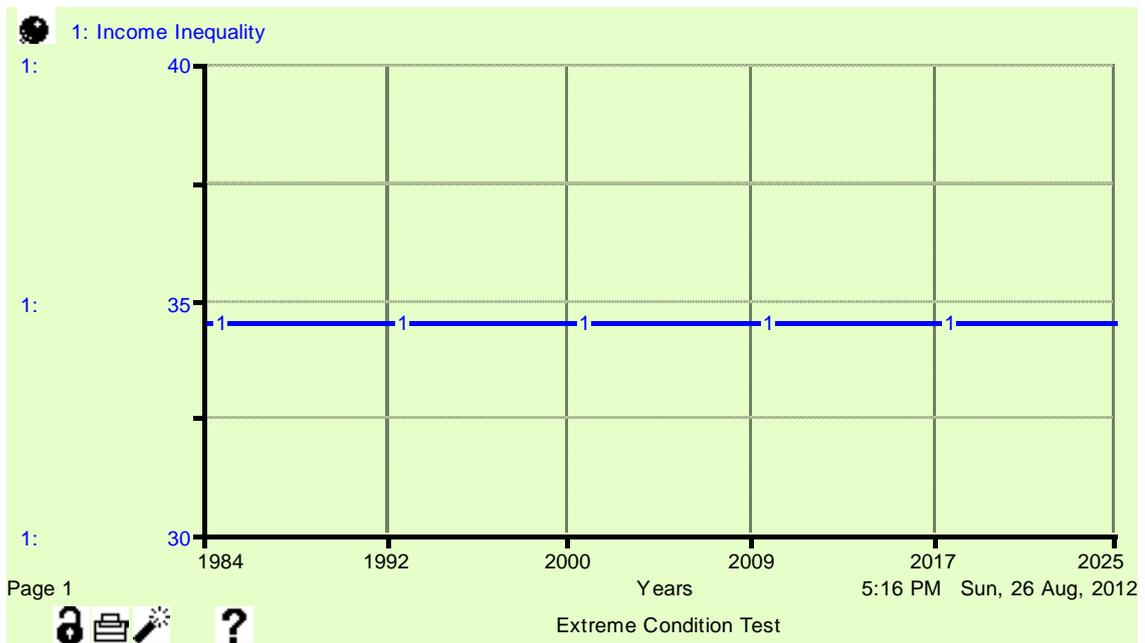


Figure A5.11: System Dynamics Model at Equilibrium (Income Inequality)

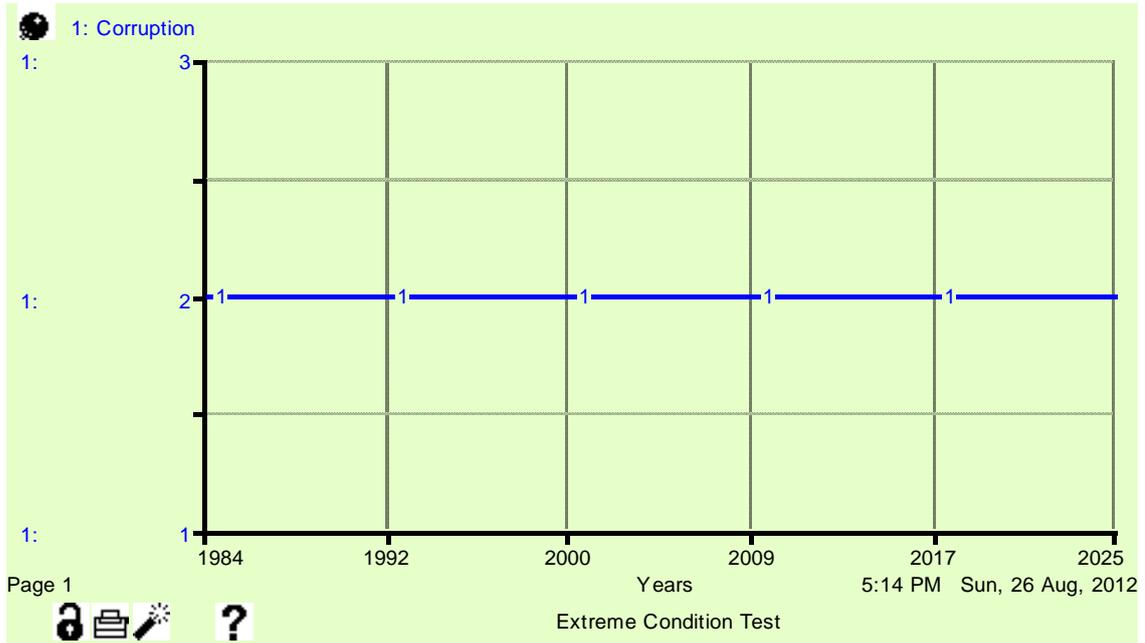


Figure A5.12: System Dynamics Model at Equilibrium (Corruption)

## Appendix XI – Test of Model Behaviour

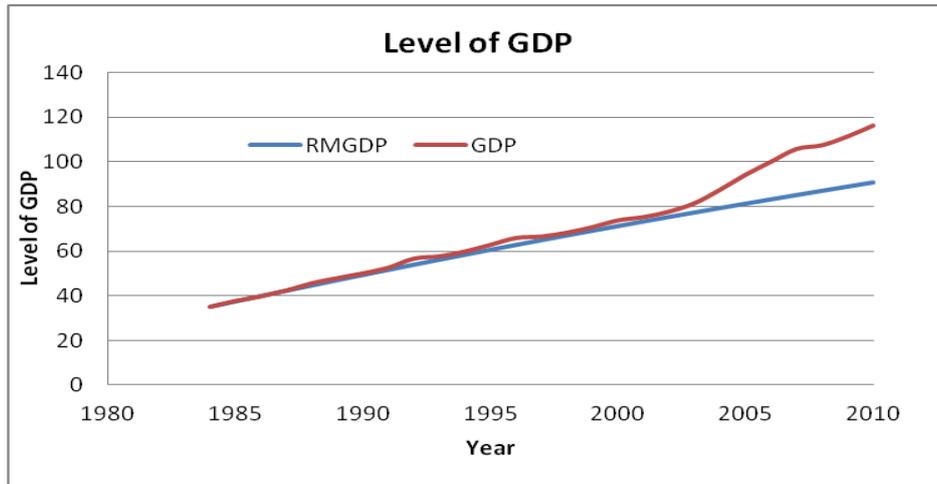


Figure A5.13: SD Model Behaviour Reproduction (Level of GDP)

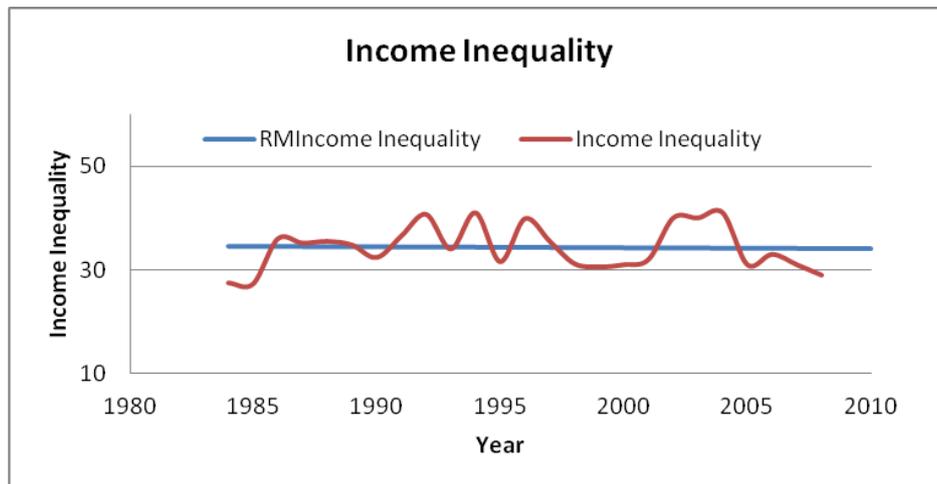


Figure A5.14: SD Model Behaviour Reproduction (Income Inequality)

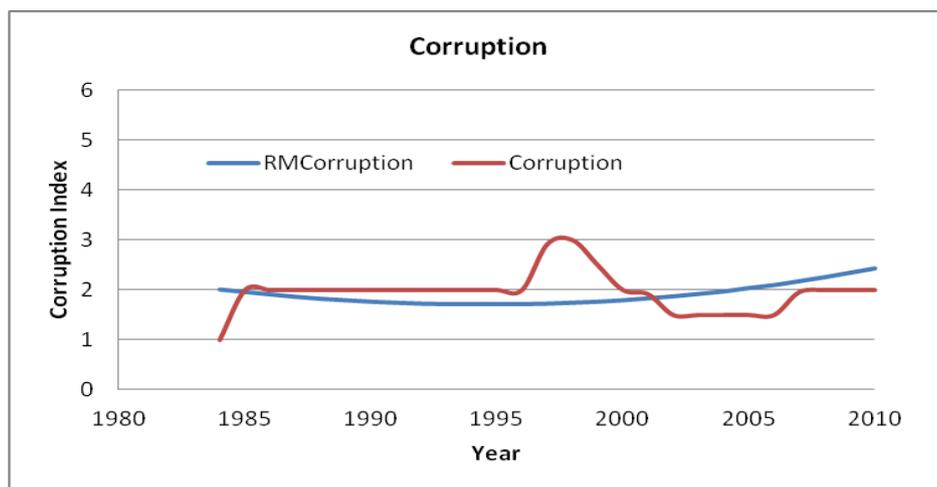


Figure A5.15: SD Model Behaviour Reproduction (Corruption)

## References

- Abed, G., and Sanjeev G. (2002), *Governance, Corruption, and Economic Performance*, Washington, DC, United States of America: IMF.
- Ades, A., and Di Tella, R. (1999), 'Rents, Competition and Corruption', *American Economic Review*, 89, 982-993.
- Afzal, S. N., (2010), *Competing Views on the Pakistani economy*. Lahore, Pakistan: Spearhead Research.
- Alam, M. S. (1989), 'Anatomy of corruption: An approach to the political economy of underdevelopment', *American Journal of Economics and Sociology*, 48(4): 441-456.
- Alam, M. S. (1995), 'A Theory of Limits on Corruption and Some Applications', *Kyklos*, 48(3): 419–35.
- Alesina, A. R. N., Ozler S., and Swagel, P. (1992), *Political Instability and Economic Growth*, NBER Working Paper No: 4173.
- Alhassan-Alolo, N., (2007), Gender and corruption: testing the new consensus. *Public Administration and Development*, 27, 227–237. doi: 10.1002/pad.455
- Ali, A., and Crain, Mark A. (2002), 'Institutional Distortions, Economic Freedom, and Growth', *Cato Journal*, 21(3): 415-426.
- Andreski, A. (1970), *Parasitism and Subversion*, London, United Kingdom: Weidenfeld and Nicolson.
- Andvig, J. (1991), 'The Economics of Corruption: A Survey', *Studi Economici*, 43, 57-94.
- Andvig, Jens Chr., Odd-Helge Fjeldstad, Inge Amundsen, Tone Sissener, Tina Søreide. (2000), *Research on Corruption: A Policy Oriented Survey*. Report Commissioned by NORAD: Chr. Michelsen Institute and Norwegian Institute of International Affairs.
- Authenticity Consulting, L. L. C. (2006), 'What is Systems Thinking?', March 14<sup>th</sup>, 2008, [www.managementhelp.org](http://www.managementhelp.org)
- Bardhan, P. (1997), 'Corruption and development: A review of issues', *Journal of Economic Literature*, XXXV/3 (September): 1320-1346.
- Bardhan, P. (2006), 'The Economist's Approach to the Problem of Corruption', *World Development* 34(2): 341–48.
- Bartoszczuk, P. (2004), *SD Model of Economic Growth with Environmental Aspects*, System Dynamics Congress Oxford, UK, Retrieved from [http://www.systemdynamics.org/conferences/2004/SDS\\_2004/PAPERS/257BARTO.pdf](http://www.systemdynamics.org/conferences/2004/SDS_2004/PAPERS/257BARTO.pdf).
- Benbasat, I., Goldstein, D. K., & Mead, M. (1987), The Case Research Strategy in Studies of Information Systems. *MIS Quarterly*, 11(3), 369-388.

- Berg, L. A., Blue, R., and Hoffman, R. (2008), *Pakistan Rule of Law Assessment – Final Report*, Prepared for the USAID/Pakistan by Management System International, Washington D. C, United States of America.
- Bernard, H.R. (1994), *'Unstructured and semi structured Interviewing'*, Research Methods in Anthropology, Qualitative and Quantitative Approaches, London, United Kingdom: SAGE.
- Bertalanffy, L. Von. (1968), *General system theory*, New York, United States of America: Braziller.
- Blundo, G., and de Sardan J. P. O. (2000), 'La corruption comme terrain: Pour une approche socio-anthropologique', in Giorgio Blundo (ed.) *Monnaies les Povoires. Espaces, Mécanismes et Eprésentations de la Corruption*. Paris: Presses universitaires de France.
- Boczko, T. (2008), *Corporate Accounting Information Systems*, London, United Kingdom: Financial Times Press.
- Bogdan, R. B., and Taylor S. K. (1992), *Qualitative research for education: An introduction to theory and methods*. Boston, United States of America: Allyn & Bacon.
- Boniolo, P., and Elbert, R. (2005), *A working class theory of corruption. Thematic analysis of workers' ideas about corruption and its consequences*, First International Congress of Qualitative Inquiry, University of Illinois, Urbana-Champaign, Retrieved February 28, 2009, from <http://www.iiqi.org/C4QI/httpdocs/qi2005/papers/boniolo.pdf> .
- Boyatzis, R. E. (1998), *Transforming qualitative information: thematic analysis and code development*, London, United Kingdom: Sage.
- Braun, V., and Clarke, V. (2006), 'Using thematic analysis in psychology', *Qualitative Research in Psychology*: 3, 77-101.
- Breton, A. (1996), *Competitive Governments: An Economic Theory of Politics and Public Finance*, Cambridge, United Kingdom: Cambridge University Press.
- Bryman, A. (2001), *Social Research Method*, Oxford, United Kingdom: Oxford University Press.
- Budak, J. (2006), 'Corruption in Croatia: Perceptions Rise, Problems Remain', *Economic Trends and Economic Policy*, (106), 66-99.
- Burns, N. and Grove, S. K. (1999), *Understanding Research*, 2<sup>nd</sup> edition, Philadelphia, Unites States: W.B. Saunders Company.
- Buscaglia, E., and Van, D. J. (2003), *Controlling organised crime and corruption in the public sector*, In: Forum on crime and society, (1 & 2), United Nations Publication.
- Cameron, L., Chaudhuri, A., Erkal, N., and Gangadharan, L. (2005), Do attitudes towards corruption differ across cultures? Experimental evidence from Australia, India, Indonesia and Singapore, Working Paper no 943: University of Melbourne.
- Cartier-Bresson, J. (1995), 'LEconomie de la Corruption,' in Donatella Della Porta and Yves Mény, eds., *Démocratie et Corruption en Europe*, Paris: La Découverte, pp. 149-164.
- Checkland, P. (1981), *Systems Thinking, Systems Practice*, London, United Kingdom: John Wiley.

- Checkland, P. (1999), *Soft systems methodology: a 30-year retrospective; and, Systems thinking, systems practice*, Chichester, United Kingdom: John Wiley.
- Checkland, P. (2007), 'Reply to Eden and Ackerman: Any future for problem structuring methods?' *Journal Operational Research Society*, 57(7): 769-771.
- Checkland, P., and Scholes, J. (1999), *Soft Systems Methodology in Action*, New York, United States: Wiley.
- Chene, M. (2008), *Overview of Corruption in Pakistan*, Berlin, Germany: Transparency International.
- Choucri, N. (1981), *International Energy Futures: Petroleum Prices, Power, and Payments*, Cambridge, MA, United States of America: MIT Press.
- Choucri, N. and M. Bousefield (1978), 'Alternative Futures: An Exercise in Forecasting,' in Choucri, N. and T. W. Robinson, eds., *Forecasting in International Relations*. Cambridge, MA. San Francisco: W. H. Freeman and Co.: 308-326.
- Choucri, N. Electris, C. Goldsmith, D. Mistree, D. Madnick, S. & Morrison, J. (2006), *Understanding & Modelling State Stability: Exploiting System Dynamics*, MIT Sloan Working Paper 2006(4574).
- Cobb, L. and González, M. A. (2007), 'Corruption as a System of Interlocking Vicious Cycles: Lessons from Nation Lab', *Security and Defence Studies Review*, 7(1).
- Collis, J. and Hussey, R. (2009), *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*, Basingstoke, Hampshire, United Kingdom: Palgrave Macmillan Publishing.
- Collis, J., and Hussey, R. (2003), *Business Research: A Practical Guide for Undergraduate and Postgraduate Students* (2nd ed), Basingstoke, Hampshire, United Kingdom: Palgrave Macmillan Publishing.
- Cope, M. (2002), Feminist Epistemology in Geography, In Moss, P. (Ed.). *Feminist Geography in Practice: Research and Methods*, Belfast, United Kingdom: Blackwell Publishers.
- Crabtree, B. F., and Miller, W. L. (1999), *Doing Qualitative Research*, London, United Kingdom: Sage.
- Crotty, M. (1998), *The Foundations of Social Research: Meaning and Perspective in the Research Process*, New South Wales, Australia: Allen and Unwin.
- Daniel, K. (1997), 'Corruption: The Facts,' *Foreign Policy*, 107 (Summer), 114–31.
- Davoodi, H., Clements, B., Schiff, J., and Debaere, P. (2001) Military spending, the peace dividend, and fiscal adjustment, *IMF Staff Papers*, 48, 290 – 316.
- Davoodi, H., Gupta, S., and Alonso-Terme, R. (1998), 'Does Corruption Affect Income Inequality and Poverty?' *IMF Working Paper No. 79*. Washington: International Monetary Fund.
- Deiningner, K., and Lyn, Squire. (1996), 'A New Data Set Measuring Income Inequality', *The World Bank Economic Review*: 10, 565-91.

- Diamond, L. (1993), 'Nigeria's Perennial Struggle against Corruption: Prospects for the Third Republic', *Corruption and Reform*, 7: 215-25.
- Diamond, L. (1994), 'Re-thinking Civil Society: Toward Democratic Consolidation' *Journal of Democracy*, 5(3).
- Doig, A. (1995), Good government and sustainable anti-corruption strategies: A role for independent anti-corruption agencies?. *Public Administration and Development*, 15: 151–165. doi: 10.1002/pad.4230150206
- Dudley, R. G. (2000), '*The Rotten Mango: The Effect of Corruption on International Development Projects*', Eighteenth International Conference of the System Dynamics Society 'Sustainability in the Third Millennium'. Retrieved from <http://pws.prserve.net/RGDudley/PDF/rtmango1.pdf>.
- Ehlich, I. and Lui, Francis T. (1999), 'Bureaucratic Corruption and Endogenous Economic Growth', *Journal of Political Economy*, 107(6), 270-293.
- Eisenhardt, K. M., & Graebner, M. E. (2007), Theory Building from Cases: Opportunities and Challenges. *Academy of Management Journal*, 50(1), 25-32.
- Ekpo, M.U. (1979), 'Gift-giving and bureaucratic corruption in Nigeria', *Bureaucratic Corruption in Sub-Saharan Africa: Toward a Search for Causes and Consequences*, M.U. Ekpo, ed, Washington D.C., Unites States: University Press of America.
- Elliott, R., Fischer, C. T., and Rennie, D. L. (1999), 'Evolving guidelines for publication of qualitative research studies in psychology and related fields' *British Journal of Clinical Psychology*, 38(3), 215-229.
- Fereday, J., & Muir-Cochrane, E. (2006), 'Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development' *International Journal of Qualitative Methods* 5(1), 1-11.
- Forrester, J. W. (1992), 'Policies, Decisions and Information Sources for Modeling' *European Journal of Operational Research*, 59(1), 42-63, doi: 10.1016/0377-2217(92)90006-U.
- Forrester, J. W. (1958), 'Industrial Dynamics — A Major Breakthrough for Decision Makers', *Harvard Business Review*, 36(4), 37-66.
- Forrester, J. W. (1961), *Industrial Dynamics*, Cambridge, MA, United States of America: MIT Press.
- Forrester, J. W. (1980), *Principles of Systems*, 2<sup>nd</sup> Preliminary Edition, Cambridge, MA, United States of America: MIT Press.
- Forrester, J. W. (1987), 'Nonlinearity in High-Order Models of Social Systems' *European Journal of Operational Research*, 30(2), 104-109.
- Forrester, J. W. (1991), 'System Dynamics and the Lessons of 35 Years,' in *The Systemic Basis of Policy Making in the 1990s*, Kenyon B De Greene, ed. Available online: <http://www.echelon4.com/content%20files/forrester%20d4224.pdf> (Accessed March 23, 2009).

- Forrester, J. W. (2007), 'System dynamics — the next fifty years' *System Dynamics Review*, 23: 359–370, doi: 10.1002/sdr.381
- Forrester, J. W. and Senge, P. M. (1980), 'Tests for building confidence in system dynamics models' *TIMS Studies in the Management Sciences*, 14, 209 – 228.
- Friedman, E., Johnson, S., Kaufmann, D., Zoido-Lobatón, P. (2000), 'Dodging the grabbing hand: the determinants of unofficial activity in 69 countries', *Journal of Public Economics*, 76, 459-493.
- Friedrich, C.J. (1972), *The Pathology of Politics, Violence, Betrayal, Corruption, Secrecy and Propaganda*, New York, United States of America: Harper and Row.
- Gene, B. (2006, October 12). Retrieved February 21, 2008, from <http://10outof10.blogspot.com/2006/12/simple-systems-thinking-model-of.html>
- Ghaffarzadegan, N., Lyneis, J., and Richardson, G. P. (2011), 'How small system dynamics models can help the public policy process' *System Dynamics Review*, 27(1), 22-44.
- Gharajedaghi, J. (1999), *Systems Thinking: Managing Chaos and Complexity: A Platform for Designing*. Burlington, MA, United States of America: Butterworth Heinemann.
- Gibson, W. Hall, A. and Callery, P. (2006), 'Topicality and the structure of interactive talk in face-to-face seminar discussions: Implications for research in distributed learning media' *British Educational Research Journal*, 32(1), 77-94.
- Granovetter, M. (2005), 'The Social Construction of Corruption', Stanford University: Working Paper.
- Gregor, S. (2006), 'The Nature of Theory in Information Systems', *MIS Quarterly*, 30(3), 611-642.
- Guba, E. G., and Lincoln, Y. S. (1994), 'Competing paradigms in qualitative research,' in *Handbook of Qualitative Research*, N.K. Denzin and Y.S. Lincoln (eds.), Sage, Thousand Oaks, 105-117.
- Haggard, S. (1997), 'Reform of the State in Latin America' in Burki, S. J. and Perry, G. (1997) *Development in Latin America and the Caribbean*, Washington DC: World Bank.
- Hall, Robert E., and Charles, Jones. (1999), 'Why do Some Countries Produce so Much More Output per Worker than Others?', *Quarterly Journal of Economics*, 83-116.
- Haller, D., and Shore, C., (2005), *Corruption: Anthropological Perspectives*. London, United Kingdom: Pluto Press.
- Hammond, R. (2000), *Endogenous Transition Dynamics in Corruption: An Agent-Based Computer Model*, centre on Social and Economic Dynamics, Working Paper No.19/12/2000.
- Haque, M. S. (2001), 'The Diminishing Publicness of Public Service under the Current Mode of Governance' *Public Administration Review* 61(1): 65–82.
- Haque, M.S. (2000), 'Significance of Accountability under the New Approach to Public Governance' *International Review of Administrative Sciences* 66(4): 599-618.

- Hashmani, K. (2010), *Corruption in Pakistan hurts common People and Breeds Extremism*, Retrieved from <http://iaoj.wordpress.com/2010/01/23/corruption-in-pakistan-hurts-common-people-and-breeds-extremism/> Date 10.10.2010.
- Heidenheimer, A. J., Johnston, M., and LeVine, V. T. (1989), *Political Corruption, A Handbook*, <http://www.transparency.de/index.html>
- Hindriks, J., Keen, M., and Muthoo, A. (1999), 'Corruption, extortion and evasion,' *Journal of Public Economics*: 74, 395 – 430.
- Holbrook, A. (1997), 'Ethics by numbers? An historian's reflections on ethics in the field', *Review of Australian Research in Education*: 4, 49-66.
- Huntington, Samuel P. (1968), *Political Order in Changing Societies*. New Haven, United States of America: Yale University Press.
- Hussain, M., and Hussain, A. (1993), *Pakistan: Problems of Governance*. Lahore, Pakistan: Vanguard Books Pvt. Ltd.
- Hussain, Z. (2008), *Frontline Pakistan: The Path to Catastrophe and the Killing of Benazir Bhutto* 2nd edition, London, United Kingdom: I B Tauris.
- Javaid, U. (2010), 'Corruption and its Deep Impact on Good Governance in Pakistan', *Pakistan Economic & Social Review*, 48(1), 123-134.
- Johnston, M. (1997), 'Public Officials, Private Interests, and Sustainable Democracy: When Politics and Corruption Meet,' *Corruption and the Global Economy*, ed. by Kimberly Ann Elliott (Washington: Institute for International Economics), 61–82.
- Johnston, M., and Heidenheimer, A. J. (2000), *Political Corruption*. New Brunswick, N. J., United States of America: Transaction Press
- Kaufmann, D., and Shang-Jin, Wei. (1998), 'Does 'grease money' speed up the wheels of Commerce?', NBER Working Paper No. 7093(04).
- Kaufmann, D., Kraay A. and Zoido-Lobaton P. (1999), 'Governance matters', *World Bank Policy Research Paper*, no. 2196. Washington DC: World Bank.
- Kaufmann, D., Kraay, A., and Mstruzzi, M. (2003), *Governance matters III: governance indicators for 1996-2002*, Policy Research Working Paper No. 3106, The World Bank.
- Kenyon B. De. Greene. (1993), The growth of exhaustion, *European Journal of Operational Research*, Volume 69, Issue 1, , 14-25, ISSN 0377-2217, 10.1016/0377-2217(93)90086-3.
- Khan, M. (1996), 'A typology of corrupt transactions in developing countries' *IDS Bulletin*: 8(5).
- Khan, M. (2004), *The Public Sector and Privatization*, Discussion Paper.
- Khan, M. (2005), *Social Transformation and the State*, Discussion Paper, London: SOAS.
- Khan, M. (2006) 'Determinants of Corruption in Developing Countries: the Limits of Conventional Economic Analysis.' In: Rose-Ackerman, Susan, (ed.), *International Handbook on the*

- Economics of Corruption*. Cheltenham: Edward Elgar, pp. 216-244. (Elgar original reference)
- Khan, M. (2006), 'Corruption and Governance in South Asia,' In: Daniel, Lynn, (ed.), *South Asia 2006*. London, United Kingdom: Europa publications.
- Khan, M. (2006), 'Corruption and Governance' In: Jomo, S Kwame and Fine, Ben, (eds.), *The New Development Economics: after the Washington Consensus*. London and New Dehli, India: Zed Press and Tulika, pp. 200-221.
- Khan, M. (2001), *Bureaucratic and Political Corruption in Pakistan*, Project Report.
- Khan, M. (2004), 'State Failure in Developing Countries and Institutional Reform Strategies.' In: Tungodden, B. and Stern, N. and Kolstad, I., (eds.), *Toward Pro-Poor Policies, Aid, Institutions, and Globalization, Annual World Bank Conference on Development Economics, Europe (2003)*. Oxford, United Kingdom: Oxford University Press and World Bank, pp. 165-195.
- Kiegelmann, M. (1996), *The Subject Writes Back: Reflections on Ethics in Qualitative Research*, New York: United States of America: AERA conference.
- Kim, D. H. (1999), *Introduction to Systems Thinking*. London, United Kingdom: Pegasus Communications.
- Klitgaard, R. (1988), *Controlling Corruption*. Berkeley, United States of America: University of California Press.
- Knack, S. and Keefer, P. (1995), 'Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures', *Economics and Politics* 7(3): 207–27.
- Konza, D. (1998), *Ethical issues in qualitative research: What would you do?* Retrieved 18 May, 2009, from <http://www.aare.edu.au/98pap/kon98027.htm>
- Krueger, Anne. O. (1974), 'The Political Economy of the Rent Seeking Society', *American Economic Review*: 64, 291-303.
- Lambsdorff, J. G. (1997), 'An Empirical Investigation of Bribery in International Trade', *European Journal of Development Research*: 10(1), 40-59.
- Lambsdorff, J. G. (1998), 'An empirical investigation of bribery in international trade', *European Journal for Development Research*: 10(1), 40-49.
- Lambsdorff, J. G. (1999), *Corruption in international research – a review*, Transparency International, Working Paper, Berlin, Germany.
- Landell-Mills, P., and Serageldin, I. (1991), 'Governance and the Development Process' *Finance and Development*, 14-17.
- Leff, N. (1964), 'Economic Development through Bureaucratic Corruption', *American Behavioural Scientist*, 8-14.
- Livesey, G. (2003), Quantitative and Qualitative Research Methods, Teaching Research Methods LTSN-BEST/ICS Workshop, University of Ulster.

- Louie, M. A., and Carley, K. M. (2007), 'Balancing the criticisms: Validating multi-agent models of social systems', *Simulation Modelling Practice and Theory*, (16), 242-256.
- Lui, Francis T. (1985), 'An equilibrium queuing model of bribery', *Journal of Political Economy*, 93(4): 760-81.
- Luo, Y. (2004), 'An organisational perspective of corruption', *Management and Organisation Review*, 1(1): 119-154.
- Maani, K., E., and Cavana, R., Y. (2007), *Systems Thinking, System Dynamic: Managing Change and Complexity* (2 ed.). Pearson Education New Zealand: Pearson: Prentice Hall.
- MacDonald, R. (2011), *System Dynamics Modeling*, Retrieved from URL: <http://www.isdps.org/System%20Dynamics.htm>
- Macrae, J. (1982), 'Underdevelopment and the Economics of Corruption: A Game Theory Approach' *World Development*, 10 (8): 677-687.
- Mahmood, K., Malik, W. S., and Sattar, W. A (2007), 'The Fiscal Reaction Function and the Transmission Mechanism for Pakistan,' *The Pakistan Development Review*, 46(4): 435-447.
- Mahrwald, S. (2009), *Rule of Law: The Case of Pakistan*, Paper presented at the Heinrich-Böll-Stiftung, Germany. Retrieved from [http://www.boell.de/downloads/Rule\\_of\\_Law\\_Conference\\_Paper\\_Pakistan.pdf](http://www.boell.de/downloads/Rule_of_Law_Conference_Paper_Pakistan.pdf).
- Maines, D. (2000), 'The social construction of meaning Contemporary Sociology', *A Journal of Reviews*, 29: 577-584
- Maldonado, M. U. (2011, July). *Dynamics, structure and performance of Innovation Systems: A complex systems modeling approach*. Paper presented at the 29<sup>th</sup> International Conference of the System Dynamics Society, Washington, DC. Retrieved from URL: [www.systemdynamics.org/conferences/2011/proceed/index.html](http://www.systemdynamics.org/conferences/2011/proceed/index.html)
- Manor, J. (1999), *The Political Economy of Democratic Decentralization*. Washington D.C.: World Bank.
- Marcus, A. L., and Kathleen M. C. (2007), *The Role of Dynamic-Network Multi-Agent Models of Socio-Political Systems in Policy*. Pittsburgh, PA, Institute for Software Research, School of Computer Science, Carnegie Mellon University: CMU-ISRI-07-102
- Marcus, A. L., and Kathleen M. C. (2008), 'Balancing the Criticisms: Validating Multi-Agent Models of Social Systems' *Simulation Modelling Practice and Theory*, 16(2): 242 - 256.
- Mauro, P. (1995), 'Corruption and Growth', *Quarterly Journal of Economics*, 110(3): 681-712.
- Mauro, P. (1998), 'Corruption: Causes, Consequences, and Agenda for Further Research', *Finance and Development*, (March), 11-14.
- Midgley, G. (2003), *Systems thinking*,: London, United Kingdom: Sage.
- Miles, M. B., and Huberman A. M. (1994), *Qualitative Data Analysis – An Expanded Sourcebook*, Second Edition, CA, United States of America: Sage.

- Miller, J. M. (2006), Covert participant observation: reconsidering the least used method. In J. M. Miller & R. Tewksbury (Eds), *Research Methods: A Qualitative Reader* (pp. 12–19), Upper Saddle River, NJ, United States of America: Prentice Hall.
- Moore, E. J. (1985), 'On System — Theoretic Methods and Econometric Modeling,' *International Economic Review*: 26, 87-110.
- Moreno, O. L. (2000), 'Structural Corruption and Normative Systems: The Role of Integrity Pacts', en J. S. Tulchin y R. H. Espach (eds.) *Combating Corruption in Latin America*, Washington D.C.: Woodrow Wilson Centre Press.
- Morgan, L. (1998), *Corruption: Causes, Consequences, and Policy Implications*, The Asia Foundation, Working Paper No 09/10/1998.
- Murphy, K., Shleifer, A. and Vishny, W. (1991), 'The Allocation of Talent, implications for Growth', *Quarterly Journal of Economics*, 106: 503-530.
- Myers, M. (2009), '*Qualitative Research in Business & Management*', London, United Kingdom: Sage Publications.
- Myers, M., and Klein, H. K. (1999), 'A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems', *MIS Quarterly*, 23(1): 67-88.
- Myers, M. D., and Newman, M. (2007), 'The qualitative interview in IS research: Examining the craft,' *Information and Organization*, 17(1): 2-26.
- Myrdal, G. (1968a), 'Corruption as a hindrance to modernisation in South Asia' in Asian drama: *An Enquiry into the Poverty of Nations*, Gunnar Myrdal, vol. II, New York: The Twentieth Century Fund, 937-951.
- Myrdal, G. (1989), 'Corruption: Its Causes and Effects', *Political Corruption A Handbook*, Transaction Publishers, 953-962.
- Nadvi, K. and Robinson, M. (2004), *Pakistan Drivers of Change: Synthesis and Policy Implications*. Sussex: Institute of Development Studies.
- National Accountability Bureau (2002), *National Anti-Corruption Strategy*, Islamabad, Pakistan, New Brunswick: Transaction Publishers.
- Naylor, T. H. (1972), 'Simulation and Validation', Proceedings of the Sixth IFORS International Conference on Operations Research: Dublin.
- Neuman, W. L. (1994), *Social Research Methods*, 2nd Edition, Needham Heights, MA, United States of America: Allyn and Bacon.
- Neuman, W. (2000), *Social Research Methods: Qualitative and quantitative approaches*, Needham Heights, MA, United States of America: Allyn & Bacon.
- Nye, J. S. (1967), 'Corruption and political development', *American Political Science Review*, 61(2): 417-427.

- Nye, J. S. (1989), Corruption and Political Development: A Cost-Benefit Analysis. In Heidenheimer, A.J. et al. (Eds.), *Political Corruption: A Handbook*. New Brunswick, NJ, United States of America: Transaction Publishers.
- Paldam, M. (1999a), '*The big pattern of corruption: Economics, culture and the seesaw dynamics*', Working Paper No. 1999-11.
- Paris, J. (2010), '*Prospects for Pakistan*'. London, United Kingdom: Legatum Institute.
- Parker, I. (2004), Criteria for qualitative research in psychology, *Qualitative Research in Psychology*, (1): 95-106.
- Patching, D. (1990), *Practical Soft Systems Analysis*, Pitman Publishing, London.
- Patton, M. Q. (1990), *Qualitative Evaluation and Research Methods*, 2nd edition, Newbury Park, CA, United States of America: Sage Publications, Inc.
- Pegasus Communications, Inc. (2011), *What is systems thinking?*. Retrieved from URL: <http://www.pegasuscom.com/systems-thinking.html>
- Polit, D. F., and Hungler, B. P. (1999), *Research: Principles and Methods*, JB Lippincott Company, Philadelphia.
- Political Risk Services (2011), *International Country Risk Guide Dataset*, Available for purchase at <http://www.icrgonline.com>.
- Political Risk Services (2011), *Pakistan Country Report*, New York, USA: The PRS Group, Inc.
- Price, P. (1999), 'Cosmologies and Corruption in (South) India', *Forum for Development Studies*, 2: 315–327.
- Qureshi, M. A. (2008), 'Challenging trickle-down approach: modelling and simulation of public expenditure and human development – the case of Pakistan', *International Journal of Social Economics*, 35(4): 269-82.
- Qureshi, M. A. (2009), 'Human development, public expenditure and economic growth: a system dynamics approach', *International Journal of Social Economics*, 36(1/2), 93-104.
- Radzicki, M. J. (2007), 'System Dynamics and Its Contribution to Economics and Economic Modelling, In Robert A. Meyers', *Complex Systems in Finance and Econometrics*, (727-737), New York, USA: Springer.
- Richardson, G. P. (1991), *Feedback Thought in Social Science and Systems Theory*. Philadelphia, United States of America: University of Pennsylvania Press.
- Richardson, G. P., and Pugh III, A. L. (1981), *Introduction to System Dynamics Modelling with DYNAM: MA*, United States of America: Productivity Press.
- Richmond, B., and Peterson, S. (1997), *An introduction to systems thinking*. Hanover, NH, United States of America: High Performance Systems.

- Riley, S. P. (1983), 'The Land of Waving Palms': Corruption Inquiries, Political Economy and Politics in Sierra Leone'. in M. Clarke, (ed.) *Corruption: Causes, Consequences and Control*, London: Frances Pinter.
- Rimmer, M. (2000), *Reducing Poverty in Pakistan: Priorities for the Asian Development Bank*, Working Paper, Poverty Assessment: Asian Development Bank.
- Robson, C. (1993), *Real World research: A resource for social scientists and practitioner researchers*, Oxford, United States of America: Blackwell.
- Rose-Ackerman, S. (1978), *Corruption, A Study in Political Economy*: London/New York.
- Rose-Ackerman, S. (1996), 'Democracy and "Grand" Corruption', *International Social Science Journal*: 48(3).
- Rose-Ackerman, S. (1999), *Corruption and Government: Causes, Consequences and Reform*, Cambridge, United Kingdom: Cambridge University Press.
- Ruud, A. E. (2000), 'Corruption as Everyday Practice: The Public-Private Divide in Local Indian Society', *Forum for Development Studies*, 2: 271-294
- Ryan, G. W., and Bernard, H. R. (2000), Data management and analysis methods, In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (2nd ed., 769-802), Thousand Oaks, CA, United States of America: Sage.
- Sachs, J., and Andrew, M. W. (1997), 'Fundamental Sources of Long-run Growth', *American Economic Review*, 87: 184-188.
- Saeed, K. (1990), 'Government Support of Economic Agendas in Developing Countries: A Behavioural Model', *World Development*, 18(6).
- Saeed, K. (1991), *Towards Sustainable Development: Essays on Systems Analysis of National Policy*, Lahore, Pakistan: Progressive Publishers: Lahore.
- Saeed, K. and Prankprakma, P. (1997), 'Technological Development in a Dual Economy: Alternative Policy Levers for Economic Development', *World Development*, 25(5): 695-712.
- Saeed, K. (2005), Classical Economics on Limits to Growth, Centre for Full Employment and Price Stability, Seminar Paper No. 14: Retrieved August 22, 2011 from URL: <http://www.cfeps.org/pubs/sp/sp14.html>
- Saugestad, S. (2000), 'Dilema in Norwegian Development Assistance to Indigenous People: A Case Study from Botswana', *Forum for Development Studies*, 2: 205-234.
- Schrage, M. (2000), *Serious Play: How The World's Best Companies Simulate to Innovate*. Boston, MA, United States of America: Harvard Business School Press.
- Scott, J. C. (1972), *Comparative Political Corruption*, New Jersey, United States of America: Prentice-Hall, Englewood Cliffs.
- Sergeyev, A. and Moscardini, A. (2006), 'Governance of economic transitions: a case study of Ukraine', *Kybernetes*, 35(1/2): 90-107.

- Shafqat, S. (1999), 'Pakistani Bureaucracy: Crisis of Governance and Prospects of Reform', *The Pakistan Development Review*, 38: 995-1017.
- Shleifer, A. and Vishny, R. W. (1993), 'Corruption', *The Quarterly Journal of Economics*, 108: 599–617.
- Silverman, B. G., Gnana K. B., and Benjamin N. (2007), 'Profiling is politically 'Correct': Agent-Based Modeling of Ethno-Political Conflict' *Departmental Papers (ESE)* Available at: [http://works.bepress.com/barry\\_silverman/23](http://works.bepress.com/barry_silverman/23)
- Silverman, B.G. Bharathy, G.K. Kim, J.N. Roddy, M. and Poe, M. (2008), 'State and Sub-State Actors: Synthesizing Theories across the Social Sciences', University of Pennsylvania.
- Silverman, Barry G. Gnana K. Bharathy. Benjamin, N. G., Jiyun Kim, Mark Roddy, and Mjumbe P. (2009), 'State and Sub-State Actors: Synthesizing Theories Across the Social Sciences,' in *Estimating Impact: A Handbook of Computational Methods and Models for Anticipating Economic, Social, Political and Security Effects in International Interventions*, Alexander Kott: Springer.
- Singer, T. and Kimbles, S. (2004), *The Cultural Complex: Contemporary Jungian Perspectives on Psyche and Society*, New York, United States of America: Brunner-Routledge.
- Situngkir, H. and Khanafiah, D. (2004), 'Theorizing Corruption', *Journal of Social Complexity* 1(3): Bandung Fe Institute.
- Situngkir, H. (2003), *Moneyscape: A Generic Agent-Based Model of Corruption*, Working Paper WPC 2003. Bandung Fe Institute.
- Soto-Torres, M. Dolores, Ramon Fernandez-Lechon, and Pedro, F. S. (2007), A system dynamics model about public corruption: the influence of bribes on economic growth Paper presented at The 2007 International Conference of the System Dynamics Society, July 29 – August 2, 2007, Boston, Massachusetts, USA.
- Sterman, J. D. (1981), *The Energy Transition and the Economy: A System Dynamics Approach*, In partial fulfilment of a Doctorate of Philosophy, Sloan School of Management, Massachusetts Institute of Technology.
- Sterman, J. D. (2000), *Business dynamics: systems thinking and modeling for a complex world* Boston, United States of America: Irwin/McGraw-Hill.
- Strauss, A. L. (1987), *Qualitative Analysis for Social Scientists*, New York, United States of America: Cambridge University Press.
- Štulhofer, A. Čaldarović, O. Maršić, T. Gregurović, M. Odak, I., and Detelić, M. (2007), *Chronic, incurable or what? Perceptions of corruption in Croatia*, University of Konstanz Discussion Paper Series, No 5: Retrieved February 10, 2009 from [http://www.unikonstanz.de/crimeandculture/docs/Discussion\\_Paper\\_No\\_5\\_UZAG\\_Croatia\\_July\\_2007](http://www.unikonstanz.de/crimeandculture/docs/Discussion_Paper_No_5_UZAG_Croatia_July_2007).
- Štulhofer, A., Kufrin, K., Čaldarović, O., Gregurović, M., Odak, I., Detelić, M., Glavasević, B. (2008), *Crime as a Cultural Problem, The Relevance of Perceptions of Corruption to Crime Prevention. A Comparative Cultural Study in the EU-Accession States Bulgaria and*

*Romania, the EU-Candidate States Turkey and Croatia and the EU-States Germany, Greece and United Kingdom.* Croatia: University of Zagreb, Faculty of Humanities and Social Sciences.

Sundquist, B. (2008), *The Informal Economy of the Developing World: The Context, The Prognosis, and a Broader Perspective*, Retrieved February 26, 2009, from <http://www.civilizationsfuture.com/bsundquist/ie.html>

System Dynamics Society (2008), *The Field of System Dynamics*. Retrieved from URL: [http://www.systemdynamics.org/what\\_is\\_system\\_dynamics.html#approach](http://www.systemdynamics.org/what_is_system_dynamics.html#approach)

Tanzi, V. (1998), 'Corruption around the world: Causes, consequences, scope, and cures', *IMF Working Paper* 98/63. Washington D.C.

Tanzi, V. (2000a), 'Corruption, governmental activities, and markets', (88-106) in Tanzi (2000), *Policies, Institutions and the Dark Side of Economics*: Cheltenham, Edward Elgar.

Tanzi, V., and Davoodi (1997), *Corruption, Public Investment, and Growth*, IMF Working Paper: WP/97/139.

Taylor, S. J., and Bogdan, R. (1998), 'In-depth interviewing', In S J Taylor & R Bogdan, *Introduction to Qualitative Research Methods: A Guidebook and Resource* John Wiley and Sons.

Transparency International (1998), Corruption perception index 1998, accessed 3 March, 2009, <http://www.transparency.de/documents/cpi/index.html>.

Transparency International (1998), Transparency International Corruption Perceptions Index: Berlin, Germany.

Transparency International (1999), 1999 Corruption Perceptions Index, accessed 3 March, 2009, <http://www.transparency.de/documents/cpi/index.html>.

Transparency International (2002), *Pakistan's Anti-Corruption Program: Observations and Recommendations*, Berlin, Germany: Eigen, P., Hossain, K. Retrieved from URL: [unpan1.un.org/intradoc/groups/public/.../UNPAN019877.pdf](http://unpan1.un.org/intradoc/groups/public/.../UNPAN019877.pdf)

Transparency International (2007), 'The 'other 90 percent': how NGOs combat corruption in non-judicial justice systems,' in *Global Corruption Report 2007*, Transparency International (London, United Kingdom: Pluto Press).

Transparency International (2008), Transparency International Corruption Perceptions Index: Berlin, Germany.

Transparency International (2011), Transparency International Corruption Perceptions Index: Berlin, Germany.

Transparency International Pakistan (2002), *National Corruption Perception Survey 2006*, Pakistan: TIP.

Transparency International Pakistan (2006), *National Corruption Perception Survey 2006*, Pakistan: TIP.

- Transparency International Pakistan (2009), *National Corruption Perception Survey 2009*, Pakistan: TIP.
- Transparency International Pakistan (2010), *National Corruption Perception Survey 2010*, Pakistan: TIP.
- Treisman, D. (2000), 'The causes of corruption: a cross national study', *Journal of Public Economics*, 76: 399-457
- Tuckett, A. G., (2005), 'Applying thematic analysis theory to practice: A researcher's experience', *Contemporary Nurse*, 19(1-2): 75-87.
- Tullock, G. (1990), The cost of Special Privilege, in *Perspectives on Positive Political Economy*, James E. and Kenneth, A. Editions, Cambridge and New York, United States of America: Cambridge Press.
- Ullah, M. A. (2006), *Corruption, Income Inequality and Economic Growth* (M.Phil thesis), Quaid-i-Azam University, Pakistan.
- Ullah, M. A., and Ahmed, E. (2006), *Corruption and Income Inequality: A Panel Data Analysis*, Paper presented at the 22<sup>nd</sup> Annual General Meeting, Pakistan Society for Development Economists Conference, Islamabad, Pakistan. Retrieved from URL [www.pide.org.pk/psde/Archive/.../Dr.%20Eatzaz%20&%20Aman.pdf](http://www.pide.org.pk/psde/Archive/.../Dr.%20Eatzaz%20&%20Aman.pdf)
- Ullah, M. A., and Ahmed, E. (2011, December), Does *Corruption* Affect Economic Growth? Paper presented at the 27<sup>th</sup> PIDE-PSDE Conference, Islamabad, Pakistan. Retrieved from URL [www.pide.org.pk/psde/25/pdf/.../Muhammad%20Aman%20ullah.pdf](http://www.pide.org.pk/psde/25/pdf/.../Muhammad%20Aman%20ullah.pdf)
- Ullah, M. A., and Arthanari, T. S. (2011, July), *Using a Qualitative System Dynamics Approach to Investigate Perceptions of Corruption*. Paper presented at the 29<sup>th</sup> International Conference of the System Dynamics Society, Washington DC, USA. Retrieved from <http://www.systemdynamics.org/conferences/2011/proceed/papers/P1223.pdf>
- Ullah, M. A., Arthanari, T. S., and Urquhart, C. (2010, August), *Corruption and Development: Quantitative, Qualitative and Systems Perspective*. Paper presented at the Harvard Project for Asian and International Relations (HPAIR) Asia Conference, Singapore.
- Ullah, M. A., Arthanari, T. S., and Urquhart, C. (2010, July), *How can a system dynamics framework aid an understanding of corruption?* Paper presented at the 28<sup>th</sup> International Conference of the System Dynamics Society, Seoul, Korea. Retrieved from <http://www.systemdynamics.org/conferences/2010/index.htm>
- Ullah, M. A., Urquhart, C., and Arthanari, T. S. (2010, December), *Using thematic analysis approach to investigate perceptions of corruption and its consequences*. Paper presented at The Australian Sociology Association, Sydney, Australia.
- Ullah, M. A., Urquhart, C., and Arthanari, T. S. (2011, September), *Perceptions of Corruption in Pakistan: A Case Study*. Paper presented at the Australian and New Zealand Society of Criminology Conference (ANZSOC), Geelong, Australia.
- Ullah, M. A., Urquhart, C., and Arthanari, T. S. (Forthcoming 2012), *Perceptions of Corruption in Pakistan: A Case Study*. *Development Policy Review*, under review.

- United Nations Development Program (1997), Corruption and good governance, Discussion paper no. 3: Retrieved May 17, 2010 from [http://www.undp.org/oslocentre/PAR\\_Bergen\\_2002/corruption3.htm](http://www.undp.org/oslocentre/PAR_Bergen_2002/corruption3.htm).
- United Nations Development Program (1997), *Governance for Sustainable Human Development: a UNDP Policy Document*. New York, UNDP; <http://magnet.undp.org/policy/chapter1.htm>
- United Nations Development Program (2002), National anti-corruption strategy – 2002, Retrieved on May 17, 2010 from [http://www.undppc.org.fj/userfiles/file/Pakistan\\_National\\_Anti-CorruptionStrategy.pdf](http://www.undppc.org.fj/userfiles/file/Pakistan_National_Anti-CorruptionStrategy.pdf).
- United Nations Development Program (2008), Human Development Report 2008: UNDP.
- United Nations Economic and Social Commission for Asia and the Pacific (2007), What is Good Governance? Poverty and Development Division, Retrieved from URL: [www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp](http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp) (Accessed on November 01, 2009).
- United Nations Office of Drug Control and Crime Prevention (2002), *Global Dynamics of Corruption, The Role of the United Nations Helping Member States Build Integrity to Curb Corruption*. Vienna: Langseth, P. <http://unpan1.un.org/intradoc/groups/public/documents/untc/unpan011982.pdf>
- Urquhart, C. (1999), 'Themes in Early Requirements Gathering — The Case of the Analyst, the Client and the Student Assistance Scheme', *Information Technology and People*: 12(1).
- Urquhart, C. (2012), *Grounded Theory for Qualitative Analysis: A Practical Guide*, London, United Kingdom: SAGE Publications Ltd.
- Vennix, J. A. M. (1996), *Group Model Building: Facilitating Team Learning Using System Dynamic*, Chichester, United Kingdom: Wiley.
- Ventana Systems (2002), *Vensim User's Guide, Version 5*, USA: Ventana Systems Inc.
- Vogl, F. (1998), 'The supply side of global bribery', *Finance and Development*, 35(2): International Monetary Fund.
- Wadel, C. (1991), *Feltarbeid i egen kultur*, Flekkefjord, Norway: SEEK.
- Weber, L. (2010), *Demographic Change and Economic Growth: Simulations on Growth Models*, Leipzig, Germany: Springer.
- Weingast, B. R. (1995), 'The economic role of political institutions: market-preserving federalism and economic development', *Journal of Law, Economics and Organisation*, 11(1): 1-31.
- Whitehead, A. N. (1925), *Science in the Modern World* (rev. ed. 1952), New York, United States of America: Mentor.
- Winz, I., and Brierley, G. (2009), *Simulating Pollution from Urban Storm water in Project Twin Streams Catchment, Auckland, New Zealand*, 27th International Conference of the System Dynamics Society, Albuquerque, USA, 27-31 July. Available:<http://www.systemdynamics.org/conferences/2009/proceed/papers/P1253.pdf>

- Wolstenholme, E. F. (1990), *System Enquiry: A System Dynamics Approach*, New York, NY, United States of America: John Wiley & Sons, Inc.
- World Bank (1995), *Bureaucrats in Business, The Economics and Politics of Government Ownership*, A World Bank Policy Research Report: Washington DC.
- World Bank (1997), '*Helping Countries Combat Corruption*', Washington, D.C.: The World Bank, Poverty Reduction and Economic Management Program.
- World Bank (2000), 'Helping countries combat corruption, Progress at the World Bank since 1997', A World Bank Policy Research Report, Washington DC: Academic Press.
- World Bank (2004), *Mainstreaming Anticorruption Activities in World Bank Assistance: A Review of Progress since 1997*. Washington, DC: World Bank.
- World Bank (2011), *World Development Indicators 2011*: Washington, DC.
- World Bank (2012), *World Development Report 2012: Gender Equality and Development*, World Bank, Washington D.C.
- Yang, H., Zhang, Y., and Tong, X. (2006), *System Dynamics Model for Demand Side Management*, 3<sup>rd</sup> International Conference on Electrical and Electronics Engineering, Veracruz, Mexico, Retrieved February 13, 2009, from <http://www.scribd.com/doc/7071232/System-Dynamics-Model-for-Demand-Side-Management>
- Yin, R. K. (1989), *Case study research: Design and methods*, Newbury Park, CA, United States of America: Sage.
- Yin, R. K. (2009), *Case Study Research: Design and Methods*, (4<sup>th</sup> Edition), Thousand Oaks, CA, United States of America: Sage Publications.
- Zaidi, S. A. (2005), 'The Political Economy of Decentralisation in Pakistan', Transversal Theme 'Decentralisation and Social Movements', Working Paper No. 1.