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ECONOMIC AND STUDIES UNIT MINISTRY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Considerations for the First Year
DRAFT

August 16, 2007

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ECONOMIC AND STUDIES UNIT MINISTRY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

CONSIDERATIONS FOR THE FIRST YEAR

DRAFT

SUSTAINABLE ACHIEVEMENT OF
BUSINESS EXPANSION AND QUALITY (SABEQ)

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FOREWORD

The Economic and Studies Unit (ESU) of the Ministry of Information and Communications Technology (MoICT) in Jordan is a fledgling operating unit that began operations in July of 2007. Initially, technical assistance provided by the SABEQ project developed a statement of mission, organization and required capacity. The report by Nester, *et al*, represents a comprehensive overview of the responsibilities of the Unit and identifies the staffing mix required to successfully achieve MoICT analytic objectives. In August of 2007, support continued with initial technical assistance focusing on the development of analytic capacity within the Unit required to undertake its mission. This Report represents the activities undertaken in this initial three-week mission and provides a high-level roadmap for ESU development, given its current state.

THE ECONOMIC AND STUDIES UNIT

Founded in July, 2007, the ESU consists of two full-time MoICT employees, Mr. Sameh Al Ajlouni and Hamed Al-Shraideh, both holding the position of Economist. The Unit is without Head, although Mr. Amjad Attar (Sr. Economist with the Strategic Planning and Statistics Unit) is viewed as the incumbent to this position. Current staffing is below the level reported by Nester as the expected strength of the Unit at inception, and significantly below the eight staff members envisioned as an “intermediate” staffing level.

A Unit such as the ESU requires a Head to provide organizational and technical leadership. As this position is currently unfilled, the Director of the Department of Policy and Strategy, Mr. Sami Dabbas, is currently relying on SABEQ to guide technical development of the Unit. This relationship is expected to evolve once the position of Unit Head is filled.

The ESU is responsible for providing analysis of the ICT sector. As such, the ESU should:

- Monitor ICT sector performance.
- Forecast ICT performance indicators
- Analyze relevant policy proposals.

While these activities are related, they should be viewed independently. The technical requirements of a monitoring activity are different that the requirements of forecasting. Monitoring is based on the collection of information and comparing observations to pre-defined benchmarks. Analysis is performed to identify the causes of any variations. Forecasting, on the other hand, requires technical statistical and econometric techniques not normally employed in the monitoring process. Policy analysis is based on a wide range of technical skills, but requires the ability to conceptualize “what if” scenarios and derive expected outcomes. This is different from forecasting in that forecasting is normally based on a set of baseline assumptions (e.g., current law), where as policy analysis evaluates deviation from the baseline. Of these three responsibilities, Monitoring is the most important to Unit development in that it will provide the Unit with an improved level of understanding about the composition and dynamics of the ICT sector.

Initial discussions with the ESU focused on the monitoring of the National ICT Strategy. This is the context within which the following discussion is developed.

MONITORING

Periodic monitoring of program performance is a staple of program management. By tracking program implementation through the evaluation of intermediate outcomes, management can determine whether program goals will be achieved. Analysis of periodic performance can inform revisions in program objectives or changes in implementation strategy. This document outlines the fundamentals of a monitoring process and provides a template for program monitoring.

The monitoring of program performance proceeds with the expectation that information collected will lead to better program execution and possible revisions of expected program outcomes. The monitoring process has three primary components:

- regular collection of periodic indicators;
- comparison of indicator values to pre-established benchmarks; and
- analysis of deviations from the expected trajectory.

It is not sufficient to simply collect data for analysis. The monitoring process relies on the existence of a pre-existing notion of where the program should be at any given time. By identifying what is supposed or expected to happen at discrete points in time, and then identifying whether those outcomes actually happened, it is possible to evaluate the likelihood that program objectives will be achieved.

Identification of Indicators

Periodic monitoring of program implementation requires collecting information on a periodic basis. The monitoring process must collect information that:

- is readily available;
- has reliable accuracy;
- is published frequently, or is closely correlated with program outcomes; and
- encompasses all aspects of program performance.

Detailed information provides greater insight into program performance, however, the cost of monitoring increases greatly as the level of detail increases. Further, when working at a high level of detail, variations in performance become more numerous, imposing a greater burden on the analyst tasked with identifying problematic trends. Ideally, one to five indicators should be selected for each major program component, allowing for both monitoring of the overall indicator and analysis of dynamics.

Establishment of Benchmark Values

Having identified what indicators will be monitored, it is necessary to define expected values for those benchmarks for the planned reporting period. If the program is to run 5 years, and reporting is to be conducted annually, benchmark values for each indicator must be established for each of the five years (end of program and four intermediate years). If reporting is done quarterly, then twenty benchmarks would be required.

Benchmark values calculated for each intermediate period should represent the expected value of that indicator, assuming that the objectives of the program are achieved. For example, if a five-year program included the passage of five pieces of legislation, we could use as a benchmark the passage of one piece of legislation per year. If year three comes to pass and no legislation has been passed, it would not be difficult to conclude that the program may have difficulty achieving the objective.

The calculation of intermediate benchmark values often relies as much on expert judgment as on available data. It is possible that the most likely path to passing five pieces of legislation is the case where all legislation is passed in the fourth year. In such a case, the benchmarks should reflect this reality, and the monitoring process would be looking for five pieces of legislation in year four.

Indicators used for monitoring come in three types:

- *Statistical* indicators are represented by numerical data. These indicators can be manipulated according to scientific principles, and intermediate benchmarks can be calculated using known dynamics.
- *Binary* indicators represent whether an action or outcome has been observed. Observing whether a law has been retracted is an example (1 might mean retracted; 0 not retracted).
- *Qualitative* indicators seek to measure change in a non-objective way. Qualitative indicators might measure whether observed events are thought to be improving.

Given the subjective nature of qualitative indicators, statistical and binary indicators are always preferred. Happily, most qualitative observations can be recast in terms of binary or statistical observations. For example, an improvement in the business environment (qualitative) might be measured as a reduction in the average time required to register a business (statistically measurable).

As a rule, qualitative indicators should only be used as a last resort and steps should be taken to ensure that they are statistically valid (for example, survey based feedback is more useful than an individual's opinion).

The method used to calculate intermediate benchmarks varies by indicator type. The last two indicators types allow for relatively straightforward intermediate results. If a result is binary, the only objective is to identify when that result should be expected. If the selected indicator is the passage of a law by the end of the program, and it is expected to be passed in year three, then the benchmark value will be 0 (law not passed) for years one and two, and 1 (law passed) for years three through five.

Qualitative indicators will in most instances be assumed to have the same value in all periods. For example, if the business climate is to "improve", then it should be expected to "improve" in all periods. Failure to do so would require further analysis.

Intermediate benchmark values for statistical indicators can often be computed using appropriate functional forms and seasonal patterns. For example, if sectoral sales are to double over five years, then a year-to-year annual growth rate of about 15% would be appropriate. If quarterly reporting is required, then quarterly data on seasonal sales would be used to distribute the increase in sales over each quarter of the program period.

Monitoring

In each reporting period, be it monthly, quarterly, or annually, the process of monitoring involves the comparison of actual observation to the pre-established benchmarks. Indicators must be collected from all sources and published in a Monitoring Report which presents the current status of the program with its expected performance. Deviations from the expected trajectory should be flagged for further analysis.

For an annual monitoring program, the monitoring process might be broken up into several intermediate reports, depending on the data reporting calendar. If a significant block of indicators are published in May, there is little reason to wait until year end to complete the monitoring process. A May report covering that subset of performance indicators would be appropriate.

Analysis

Analysis is the process of determining whether the program is expected to achieve its objectives, based on the results of the monitoring exercise. A failure to achieve an objective is certainly not good news, but does not necessarily imply an immediate cause for concern. In the event that a binary indicator fails to be realized on time, analysis should be done to identify when/if it is likely to be achieved.

If an indicator is statistical, it is usually useful to observe the patterns of observations to determine whether any deviation represents a true bias in the projection. If the indicator is sometimes larger than expected and sometimes smaller, then any single deviation presents little reason for concern. A failure to achieve the performance benchmark two or more years in a row should be flagged for further investigation into possible corrective measures. All analysis should be included in the Monitoring Report.

Since the analyst preparing the Monitoring Report is not likely to be an expert in all things, it is expected that that he/she will seek expert council in analyzing the results of the monitoring

process. It may be possible to see that some indicator is falling short of expectations, but understanding why may require a few phone calls.

An Excel template for organizing benchmarks and observed values for the three types of indicators is presented in Appendix 1.

FORECASTING

Forecasting is often described as the process of identifying the most likely future values of selected indicators. However, forecasting is more accurately defined as the process of identifying the expected future values of selected indicators, given that policies conform to an assumed fixed policy state. In a country with an evolving political landscape, these two definitions can yield dramatically different results.

The process of forecasting has four components:

- the identification of relationships between dependent and independent variables;
- the definition or estimation of functional relationships between variables;
- the projection of independent variables; and
- the projection of dependent variables.

The identification of relationships between indicators is referred to as model specification. Under normal circumstances, this step identified an economic model, consistent with economic theory, to be econometrically estimated. However, given time series data but no tangible economic theory, it is also possible to employ a time-series analytic approach (such as vector auto-regression), rather than econometrics.

While the estimation of functional relationships is often done using statistics or econometrics, in data-poor environment it is commonplace to define spreadsheet models to formalize a projection. Such a spreadsheet is usually based on known relationships, elasticities estimated “off-model”, and expert judgment.

Once a relationship has been established between dependent and independent variables, independent variables must be projected. For example, if mobile phone penetration is modeled as dependent on *per capita* income, then a projection of *per capita* income is required to forecast penetration. An example of such a forecast is presented in Appendix 2.

While forecasting is typically thought of as a sophisticated activity involving advanced econometric techniques, in reality data constraints usually prohibit such an approach. Much more typical is a spreadsheet-based analysis that employs considerable expert judgment.

POLICY ANALYSIS

Policy analysis addresses the “what if” types of questions often confronted by policymakers. While it often involves the estimation of future values for selected indicators, it differs from forecasting in that it estimates those values within the context of a proposed policy change. Such analysis then compares a projection based on a policy revision to a projection based on the baseline assumptions.

Policy analysis most often is composed of three components:

- a statement of the justification for the policy proposal;
- an analysis of the (economic) impact of the policy proposal; and
- an analysis of the cost to the State Budget of the policy proposal.

Policy proposals can be *simple* or *complex*. Simple proposals involve only a single policy change, such as a revision to a single tax rate. A complex policy proposal includes several, often competing, provisions. In practice, it is appropriate to analyze each component independently, so that policy makers can fully appreciate the implications of deleting specific provisions from the policy proposal. Care must be taken in such cases to address the issue of proposal stacking.¹ An example of an analysis of a simple policy change is presented in Appendix 3.

CURRENT CAPACITY AND CAPACITY BUILDING ACTIVITIES

While capacity to perform relevant analysis within the ESU is starting at a low level, it is not starting at zero. ESU personnel bring to the table considerable expertise in analysis, as well as a significant network of contacts. The ESU currently faces four significant capacity shortfalls:

- the ESU lacks technical leadership;
- the ESU lacks personnel;
- the ESU lacks a clear vision of expected outputs; and
- the ESU lacks technical expertise.

While the statement of these four shortcomings might be construed as harsh criticism, they are to be expected in a unit that has existed for a period best measured in weeks.

Of these criticisms, it is the lack of technical leadership that is the primary cause for concern. The ESU requires a leader who understands the mission of the ESU and is able to translate that into a technical approach to the work undertaken by the Unit. It is not sufficient to define outputs and manage resources. The Unit Head must be able to direct work and choose between approaches, based on an in-depth understanding of the costs and benefits of competing technologies.

Furthermore, the Head must be able to provide guidance to staff in appropriate ways to resolve technical difficulties. The ESU must be consistent in its approach to analysis, and that consistency must be enforced by technical leadership. Issues ranging from the technically challenging (choice of model specification) to the mundane (how many decimal places to present in a table) need consistent enforcement, based on a mature understanding of the issues involved.

The fact that this leadership is currently lacking handicaps the development of the ESU. While it is possible to develop the capacity of ESU staff members in the interim, it will not be until the ESU Head assumes the role of technical leadership that true development of ESU function can begin.

Other shortcomings in the current staffing are relatively inconsequential, or are easily resolved. The lack of personnel is certainly an issue. An analysis unit with only two working members will struggle to be responsive to the needs of the Ministry. An appropriate *initial* staffing level would be twice that level, with a Head and three analysts. Still, the two Economists currently working within the unit are making good progress towards building needed ESU infrastructure (e.g., documentation and filing capabilities), and so progress is ongoing.

¹ Proposal stacking refers to the relationship between simulated values and the order in which provisions are applied. All provisions are considered to be *stacked first* if they are all evaluated against the baseline. They are considered to be *stacked last* if they are evaluated against the final result of the entire package. They can also be *stacked sequentially*, meaning that each provision is evaluated against the baseline plus those provisions estimated earlier in the stack.

Both a vision of ESU products and the technical capacity to produce those outputs are evolving. Technical assistance in building a foundation for the analysis produced by the Unit, as well as technical training, is already underway. The ESU has already defined two types of reports (*Tech Notes* and *Policy Briefs*) to be used for reporting purposes. They have also participated in training exercises provided by the USAID Fiscal reform Project in econometrics, and the econometric software package *EViews*, with additional exercise envisioned for the near future.

WAY FORWARD

Much has already been written about the development plan for the ESU. From the original Terms of Reference to the report by Nester, *et al*, which represents a comprehensive overview of the responsibilities of the Unit and identifies the staffing mix required to successfully achieve MoICT analytic objectives. Given all that has gone before, it is reasonable to assert that expectations regarding the speed at which the ESU would “come online” have not been well grounded. Within the MoICT in particular, there has been an expectation that a fully functional, stand-alone ESU would be online and producing regular and *ad hoc* reports consistent with the Ministry’s high professional standards within a short time frame. Those expectations have been tempered to the extent that there is currently a better understanding of what is required to build the capacity of the unit, and how long that process will take. Still, pressure to produce visible outputs remains, which will have the competing effects of encouraging Unit development while, at the same time, distracting from the need to develop processes and procedures.

Ultimately, the staff of a fully functional ESU will be able to:

- design major analytic and periodic reports;
- produce periodic reports in a timely and efficient manner;
- design and produce *ad hoc* analysis on short timelines;
- perform detailed analysis in a data-poor environment;
- fully document activities; and
- recognize shortcomings in prior work and implement corrective measures.

While the ESU currently has limited capacity to undertake parts of these requirements, it will take some time before the staff has matured enough to undertake all responsibilities in a consistently adequate manner. Again, this should not be interpreted as a criticism of existing staff members; only that it is unreasonable to expect them, after only a few months on the job, to perform with the same level of competence as their counterpart in other countries who have been on the job for years or decades.

MONITORING PROGRESS

The process that the ESU uses to monitor sectoral and program performance can and should be used to monitor its own development. The July 20, 2007 report by Nester outlines six metrics that can be linked to the ESU as a means of evaluating Unit performance. These measures are:

1. *Outputs are used in the policy debate.* While the immediate client of the ESU is the Minister of ICT, there is an expectation that the Minister will use the analysis of the ESU in his dealing with the Government, Parliament, and other key players in the policy arena.
2. *Procedures are in place to collect data.* The ESU will rely on data from various sources, including DoS, int@j, and various regulatory agencies. It is necessary to

develop mechanisms through which information requests to these agencies are processed, and, as necessary, sign memoranda of understanding with them.

3. *Staff economists have the ability to anticipate needs and the capacity to respond to them.* ESU staff need to, not only have the capacity to perform analysis, but also must have the foresight required to prepare in advance for requests than are forthcoming. Unexpected requests to the ESU for analysis will likely be responded to with longer delays and with lower quality analysis than analysis that the Unit has prepared in advance for.
4. *Periodic reports are produced and disseminated.* Much of the work performed by the Unit will be repetitive, with periodic reports (e.g., monthly). Such reports exist to provide stakeholders with a constant stream of descriptive information, allowing them to gauge the dynamics of sectoral performance.
5. *Policy Reports are produced and disseminated.* The MoICT is expected to, not only promote policies leading to the development of ICT, but to support those policies with defensible analysis.
6. Key data are shared with other agencies. The ESU is expected to, not only absorb and analyze information, but provide information that are inputs into the analysis of other agencies.

The ESU should establish challenging yet reasonable benchmarks for each of these six metrics for use in monitoring its development over the course of its first year. These benchmarks should be incorporated in to its first annual workplan, with activities in the workplan directly tied to specific performance measures.

INPUTS TO DEVELOPMENT ARE REQUIRED

The first-year workplan for the ESU should split effort between capacity building and the production of outputs. Inputs into the Units development will include recruitment of staff, the development of human capital via training exercises, the development of internal procedures, the development of external relationships, and the procurement of resources. While initial efforts are already underway in all areas, there is a need to recognize that the development of the ESU will funnel resources away from the production of outputs, meaning that the output level of the Unit in the first years will not achieve the output level of a mature analysis unit. It is reasonable to expect that more than half of all staff time will be spent on efforts not directly tied to an output or report.

CONCLUSION

The newly-formed Economic and Studies Unit of the MoICT will ultimately be Jordan's principle source of ICT-specific analysis. It will have responsibility for monitoring sectoral dynamics, forecasting sector performance, and analyzing sector-specific policies. The development of such a Unit will take time. Starting from a point very close to zero, the unit will be required to devote a significant portion of staff resources to the development of capacity, be it training exercises, the development of procedures, or simply the design of Unit outputs. The Unit's first year workplan should reflect these realities, and allocate resources accordingly. The development of the ESU development should be monitored by comparing actual performance to pre-established benchmarks. To that end, challenging but realistic first-year goals should be developed.

Key to successful institutionalizing of the ESU include:

- recruiting and fielding a qualified Unit Head, capable of providing technical leadership to Unit staff and managing resources effectively;

- the development of a host of internal policies and procedures governing the workings of the unit, insuring consistency in analysis in spite of reasonable staff turn-over;
- the recruitment of and training of qualified staff members; and
- the management of internal and external expectations regarding the outputs of the Unit during its formative period.

Of these four, the recruitment of a Unit Head should be viewed as critical to the success of the Unit.

The next steps in Unit development should focus on the development of a first-year workplan. This workplan should lay out all activities to be undertaken by Unit staff during the first year, including the development of data-gathering procedures, the design of several basic report formats, the documentation of internal procedures, and the execution of a training plan. Any such workplan would be best initiated *after* a Unit Head is fielded.

APPENDIX 1: MONITORING TEMPLATE

Annual Monitoring Template
Program X of Jordan 2007-2012

Benchmarks

		Year							
Annual Rate		2005	2006	2007	2008	2009	2010	2011	2012
Statistical Indicator	32.0%	5,000	6,602	8,718	11,512	15,201	20,073	26,506	35,000
Binary Indicator		No	No	No	No	Yes	Yes	Yes	Yes
Qualitative Indicator		N/A	Not Improved	Improved	Improved	Improved	Improved	Improved	Improved

Actuals

		Year						
		2006	2007	2008	2009	2010	2011	2012
Statistical Indicator			8,000	12,000	14,500	19,000	27,000	36,000
Binary Indicator			No	No	No	Yes	Yes	Yes
Qualitative Indicator			Improved	Improved	Improved	Improved	Not improved	Improved

Difference

		Year						
		2006	2007	2008	2009	2010	2011	2012
Statistical Indicator			(718)	488	(701)	(1,073)	494	1,000
Binary Indicator					✖	✓	✓	✓
Qualitative Indicator			✓	✓	✓	✓	✖	✓

Percent

		Year						
		2006	2007	2008	2009	2010	2011	2012
Statistical Indicator			-8%	4%	-5%	-5%	2%	3%
Binary Indicator								
Qualitative Indicator								

APPENDIX 2: FORECASTING MOBILE PHONE PENETRATION

SUMMARY

The mobile phone penetration rate, defined as the number of active mobile lines per 100 persons in the Jordanian population, is currently 78%. An econometrically estimated model, based on the dynamics of fixed line penetration and *per capita* GDP was estimated. The estimated model predicts a penetration rate of 108%. This is a reasonable result, given that the EU currently has a rate of 103%, with Luxemburg at 176%.

MODEL ESTIMATION

Mobile phone penetration was regressed on fixed line penetration and *per capita* GDP. Substitution of mobile phones for fixed lines has been preset in Jordan for several years. Per capital GDP is used as a proxy for disposable income, which drives most consumer purchases. These indicators should be supplemented with an indicator tracking the price of total mobile phone costs, but such a measure is currently unavailable.

Estimation results are presented below. All coefficients are statistically significant at the 1% level. Statistics defining goodness of fit (e.g. R-squared) suggest that there is significant movement unexplained. It is expected that the model could be improved by adding cost/price data.

Model 2: OLS estimates using the 17 observations 1990-2006

Dependent variable: Penetration

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-statistic</i>	<i>p-value</i>	
const	-0.535374	0.0868653	-6.1633	0.00002	***
Fixed_Penetration	-0.043984	0.00905321	-4.8584	0.00025	***
PC_GDP	0.00095689	7.96469e-05	12.0141	<0.00001	***

Mean of dependent variable = 0.142453

Standard deviation of dep. var. = 0.227249

Sum of squared residuals = 0.0685056

Standard error of residuals = 0.0699518

Unadjusted R² = 0.917091

Adjusted R² = 0.905247

F-statistic (2, 14) = 77.4299 (p-value < 0.00001)

Durbin-Watson statistic = 0.943063

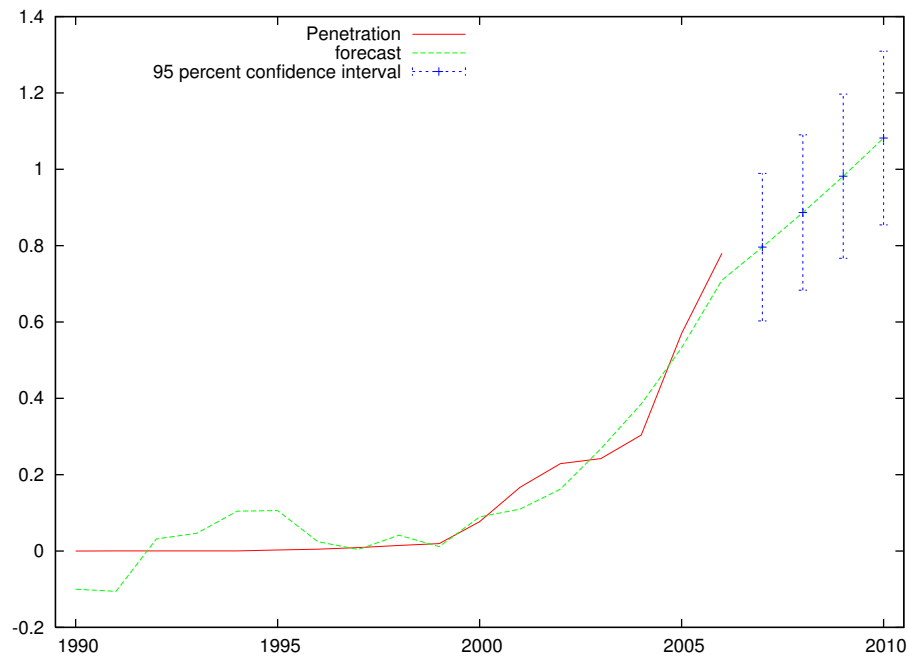
First-order autocorrelation coeff. = 0.452108

Log-likelihood = 22.7475

Akaike information criterion = -39.495

Schwarz Bayesian criterion = -36.9953

Hannan-Quinn criterion = -39.2465



FORECASTING

To generate our forecast through 2010, fixed line penetration is assumed to remain constant. *Per capita* GDP is assumed to grow at an annual rate of 5%. The 108% 2010 value represents an annual increase of 11% from the current rate of 78%, which is significantly faster than the assumed growth rate of personal income.

APPENDIX 3: AN EVALUATION OF THE MOBILE PHONE SST

SUMMARY OF FINDINGS

Jordan currently imposes a 4% Special Sales Tax (SST) on mobile phone service. This tax is levied on the same base as the General Sales Tax (GST), and for all practical purposes, represents a surcharge of 4% on top of the current 16% GST rate. It contributed 20.5 million Dinars to the Budget in 2006.

This tax inhibits mobile phone penetration, is a drag on economic growth, and is inconsistent with both the *National IT Strategy of Jordan*, which calls for a significant expansion in internet access, and the *National Agenda*, which calls for an economically transparent system of taxation. It should be eliminated as part of the overall reform of taxation in Jordan. The cost to the budget is expected to be zero after a four-year transition.

ANALYSIS

Studies conducted by international organizations, as well as within MoICT, suggest that the mobile phone surcharge is inconsistent with Jordan's development objectives. Jordan's tax burden on mobile phones is high by international standards, it inhibits mobile phone penetration, and reduces the contribution mobile phones can make to economic development. These issues are discussed below.

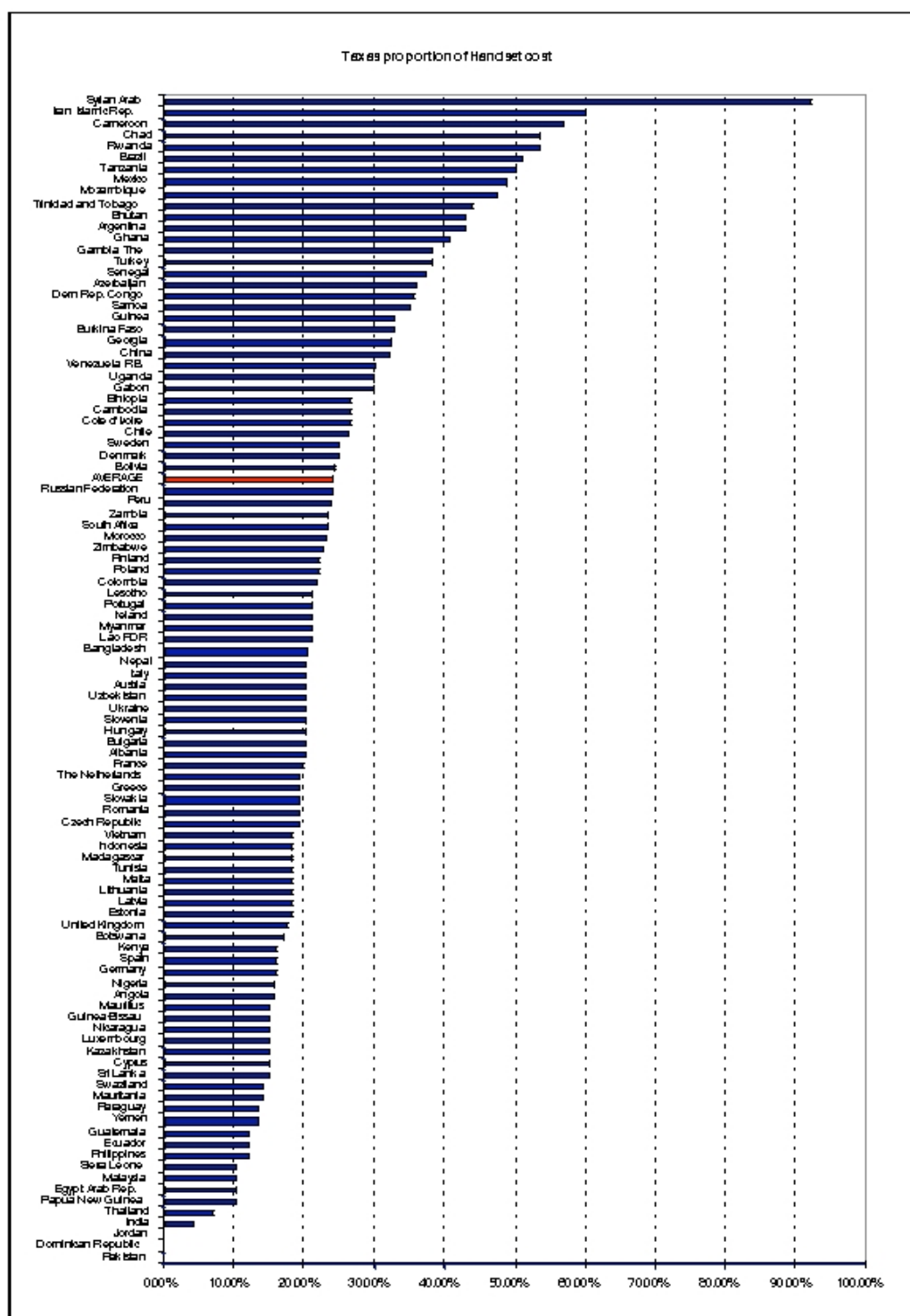
International Comparison

The taxation of mobile phones and mobile services is not consistent, either with the National Agenda, the National IT Strategy, or even internally. On one hand, mobile phone handsets are essentially tax free, carrying no import duties and a zero rate under the GST. On the other hand, mobile phone services carry not only the 16% GST, but also the 4% SST. Unfortunately, the burden imposed by the SST dominates any incentives given on the purchase of handsets. Overall, the burden that Jordan imposes on mobile phone usage is high by international standards.

In a recent study for the GSM Association, Deloitte conducted a world-wide assessment of mobile phone taxation.² This assessment included 101 countries covering 83% of the world's population. On a country-by-country basis, the Deloitte report ranked countries by the tax content of mobile phone costs.

While Jordan would like to present itself to the world as a low-tax country, the Deloitte study does not support this view. Jordan has above average tax as a percent of total cost of mobile ownership (TCMO), and tax as a percent of total mobile service costs (TMSC) ranks in the highest 25%. It is also the highest of all middle-eastern countries. The primary reason for this poor ranking in the mobile phone tax burden is the SST.

² Deloitte, *Global Mobile Tax Review 2006-2007*, 2007.



Source: Deloitte analysis based on Tarifica, Wireless Intelligence and Deloitte tax data

The way in which mobile phones are taxed is inconsistent with the National Agenda, which calls for tax simplification as a means towards improving the business climate in Jordan. To the extent that both the way that handsets and mobile phone services receive special treatment, these tax provisions are unwarranted. Furthermore, the National IT Strategy

envisioning an expansion of mobile devices as a means of increasing communication and internet access. To the extent that the SST inhibits mobile phone penetration (see below), this tax is inconsistent with this component of national policy.

Mobile Phone Penetration

Ever since Waverman³ found a strong correlation between mobile phone penetration and growth in GDP, there has been strong international interest in identifying policy instruments that can be used to stimulate penetration. Worldwide, there is a surprisingly strong correlation between mobile phone usage and economic development. Waverman, based on cross-sectional analysis of developing countries, found that an increase in mobile phone penetration of 10 phones per every 100 persons of the population would result in an increase in GDP of 0.6%.

Not surprisingly, much of this literature has followed, focusing on the impact of relevant tax policy. A 2006 study by the GSM Association stresses the “importance of taxation of mobile telephony in reducing demand and thus reducing economic growth.”⁴ The Deloitte study, referenced earlier, represents the largest study to date on the impact of taxation on the use of mobile phones. This study finds that, in Jordan specifically, a reduction of the SST by 10% would result in an increase in penetration of nearly 2%. This implies that an elimination of the SST would increase penetration by 20%. At current levels, this is the equivalent of an additional 15% of penetration, to be realized over the next four years, following directly from the elimination of the SST.

Economic Implications

As was implied by Waverman, there is a close correlation between mobile phone penetration and economic growth. Whereas Waverman demonstrated a relationship suggesting that a 10 percentage point growth in penetration would lead to a 0.6% growth in GDP, Deloitte found that number to be more than twice that size in developing countries, at 1.8%. They found the number to be close to 0.6% in the European Union.

Analysis conducted by Jordan’s MoICT estimates this relation to be 0.7% in Jordan.⁵ This figure is consistent with Jordan’s relatively high rate of mobile phone penetration and relatively advanced economy. Still, it is not necessary to be a poorly developed country to benefit from increased mobile phone penetration. The 15% increase in penetration suggested above could be expected to contribute an additional 1% to GDP. At 2007 levels, that increase would represent an additional 113 Dinars for every household in Jordan.

COST TO BUDGET

While the loss of 20.5 million JDs (at 2006 levels) to the budget is non-trivial, the economic expansion promoted by increased mobile phone penetration can be expected to offset these revenue losses. In particular, total tax revenues in Jordan in 2006 were about 2,133 million Dinars. Assuming unitary tax buoyancy, a 1% increase in GDP would result in a 1% increase in tax revenues, or 21.1 million JDs. Thus, the revenue gains from economic expansion more than offset the direct revenue loss. The Deloitte study reports the impact after four years, and so revenue loss between now and 2011 should be expected on a diminishing basis.

³ Leonard Waverman, Meloria Meschi and Melvyn Fuss, “The Impact of Telecoms on Economic Growth in Developing Countries”, 2004.

⁴ GSM Association, “Tax and the Digital Divide”, p. 65.

⁵ MoICT, “Tech Note #1, GDP Sensitivity to Mobile Phone Penetration”, 2007.

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