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DATA FOR DEVELOPMENT

ASSESSMENT PAPER

*Benefits and Costs of the Data for Development
Targets for the Post-2015 Development Agenda*

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Post-2015 Consensus

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HIGHLIGHTS

The post-2015 data revolution should fundamentally be informed by a cost and benefit analysis. Targeting development as devised in a final outcome document by the Open Working Group presumes the availability of a range of statistics – most if it only available through survey data. This paper evaluates the cost of the enabling environment and further recommends that:

- The total cost and the marginal cost needs of providing the data for each indicator should be calculated.
- The real opportunity cost of providing one indicator, as opposed to another indicator should be taken into account. This means a consideration of whether a new indicator requires new monitoring capacity, and whether this monitoring capacity may affect existing statistical capacity.
- The expected behavioral benefit of the specific design of a specific indicator should be gauged. There may be larger gains from investing in data that actively increases accountability, rather than to invest in data to monitor the specific effect of a specific aid intervention.
- The design of indicators should take into account the likelihood that the indicators can be measured reliably and accurately. Some data requests will take years to process, and cannot be expected to be reported accurately on a regular basis.
- Paying for results in development monitoring may affect data quality negatively. There is already evidence that administrative data on education and health overstates gains made, as compared to results from survey data.

The best possible cost estimates indicate that if the previous MDG agenda would have been measured it would have cost about \$28 billion. Yet, as we know there were gaps in the data and many indicators were never properly measured between 1990 and 2015. A future agenda with 169 targets has an estimated cost that is almost two times the total annual spent on official development assistance globally.

Target	Cost	Benefit	Benefit-Cost Ratio
Enable the High Level Panel's data revolution for the OWG's 17 goals and 169 targets	\$254 billion + opportunity costs of data not collected	Potentially increased transparency, lower corruption	Likely to < 1

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Introduction

The UN High Level Panel has called for a data revolution. The world's population should be counted, measured, weighed and evaluated. This information should be collected, compiled, aggregated, and presented in such a form that it can usefully inform policy makers and citizens in aggregated forms, and disaggregated according to region, village, and gender and population group.

There is no automatic connection between having correct information and making the right policy choice. It is tempting to conclude that we have been making wrong decisions because we have not had the right information, but it contains an unstated assumption that the chief constraint in policy making has been a lack of information. That may be a wrong assumption to make, but we will ignore that for a second, as this paper's primary focus is on the cost of data revolution, rather than the benefits of a data revolution.

The simple starting point taken here is that data do have a cost. So, what are the proportions we are talking about? For a start, let us say it costs roughly 1 dollar per capita to conduct a population census. Without a population census there is no baseline estimate, and the statistical office does not have a sampling frame to conduct all other needed surveys and queries. Should we conduct a worldwide population census in 2015 that would be about 7 billion USD? If the census were covered entirely by Official Development Assistance, it would take a quarter of the USAID budget, and eat up the combined budget of Norway and Denmark.

But that may be a conservative estimate. The cost of censuses obviously vary – from 0.40 dollar per capita in India, and 1 dollar per capita in China to USA's last census that cost \$13 billion, or about \$42 per head (Economist, 2011). These censuses form the baseline for most kinds of sampled based surveys to measure per capita trends in social and economic development.

The data revolution will have a considerable cost - yet the cost of data has so far gone missing in the MDG debates. There is a financial cost of monitoring, but there is also opportunity cost in terms of the competing demands placed on survey capacity. Furthermore, particular indicators have the behavioral effects of skewing activities to the completion of a specific indicator and thus away from other non-quantified goals.

The first MDG agenda was an ambitious list of development targets. Arguably, the list was adopted foremost with a view to appease different political stakeholders involved in the policy dialogue. As a result, the initial list of 8 goals and 18 targets was drawn up without a clear idea of where the data would come from. It was left to a technical group led by the World Bank to design the 48 indicators. Even today there has been no analysis into how much the provision of these data would have cost, and finally, whether the list that was adopted in 2000 was a) feasible and b) the best possible use of current resources. This paper aims to shift the discussion in this direction. The proposal put together by the High Level Panel, the post-2015 list, contained 12 goals, 54 targets, and 85 indicators (United Nations 2013a). One could have hoped that the list would be narrowed further, but in all likelihood the post-2015 list is going to be bigger and costlier – the lists are getting longer instead of shorter. A previous and preliminary list of the Open Working Group’s Sustainable Development Goals had 16 ‘focus areas’ with 160 targets, while the outcome document finally settled on 17 goals and 169 targets (UN 2014).

If the call for a ‘data revolution’ is met, it has to be accompanied by a realistic assessment of the costs and benefits of providing the data. The calculation presented here suggests that the additional survey cost of the previous MDG amounted to about \$27 billion – or about \$1.5 billion per target. Following that rule of thumb - \$1.5 billion per target - the current suggested list would cost \$254 billion. That is more than the total spent on Official Development Assistance annually – unless the Open Working Group thinks it is a good idea that as much as 12.5 percent of the total ODA over the post-2015 period is spent on statistics, then the list of targets will need to be trimmed considerably.

The development community may be repeating a mistake by simply demanding more and better data. The monitoring of specific projects should be tempered by a realistic assessment of the capacity of the statistical office to deliver this information. While in part the motivation behind the call for a ‘data revolution’ may be about building up the capacity of national statistical offices – there may be unintended consequences. The Millennium Development Goals agenda identified targets, but gave less thought to where the information should come from. This paper turns this important development question upside down. Rather than asking: ‘what kind of development should we target’, the question should be – ‘what kind of development are we able to monitor’? If official statistics is considered a public good – then just demanding more data, without a clear idea of the cost of providing the good, and the effect it may have on the quality of the public good may cause the well-known ‘tragedy of the commons’. Everyone wants more data to measure their own development priority, but no one is willing to bear the cost and responsibility of valid and reliable measurement.

More data is only better data if they contain meaningful information and there are no opportunity costs to its supply. But most data do have a cost. In particular, survey data are expensive to collect, disseminate and analyze. How expensive? This paper first goes through the current 8 goals, 18 targets and 48 indicators and calculates the cost of supplying all those data on an annual basis for all measured countries.

Looking towards the future, it would seem prudent to conduct a costing of the second set of MDG goals for post-2015. With an increase in the number of survey measurements necessary, we can expect a larger costing estimate for post-2015 goal measurement (United Nations 2013a). For the second round, a reassessment of each measurement type will be required, as will a recalculating of the cost estimates to incorporate the changes taking effect in both measurement and overall purpose.

The funding available for MDG measurement is very limited and every effort must be taken to ensure that the available funding is spent responsibly. This paper's purpose is to reconcile the existing measurement types within one body of literature, for further study and refinement where necessary. The conclusions reached are intended to be a reference for scholars concerned with MDG feasibility and operationalization.

How much would the previous MDGs Cost?

So, the first question is how much would the first set of MDGs (1990-2015) have cost to measure IF they actually had been measured? While you are able to download MDG reports with country data in them, these are not 'data' in the strict meaning of the word – it means something that is 'given' – rather the contents in the MDG dataset are in fact more often projections and estimates. There are more gaps than real observations in the MDG indicator database, and many of those observations that actually contained in the database are of dubious quality (Jerven 2013).

The previous MDGs have been criticized for being scientifically and statistically flawed (Kenny and Sumner 2011). They have been termed a "faulty yardstick", and considered to be biased because the use of absolute measures adopted by the MDGs did not take into account the relative gains many of these countries made (Vandemoortele 2009, 356; Ashwani 2006). The underlying reasons for the bias of the indicators themselves have also been called into question, and the apparently arbitrary nature of the indicators has been pointed out (Easterly 2009).

The 'constructive criticism' of the MDGs has tended to focus on calling for inclusion of the number of individuals not represented in the measurement, especially those often left out of surveying mechanisms – street children, institutionalized persons and so forth (Attaran 2005), or more 'appropriate' measurements, that for instance capture equity and the

distribution of income (United Nations 2013b). The desire to leave no one behind is clearly present, and one central UN document suggests that in the Post-2015 Agenda inequalities could be addressed through:

Setting tailored targets and disaggregating data in order to address inequalities within all goals, targets and indicators: Disaggregation of data will help measure the gaps between social and economic groups and identify who is being left behind. Setting targets to reduce these gaps (e.g. in health and education outcomes, in incomes and employment) will ensure that the most deprived are not “left until last”. This will further help to focus attention on and address direct and indirect discriminations between groups that underpin inequalities. Data should be disaggregated by at a minimum by age, sex, location, ethnicity, income quintiles and disability (United Nations 2013b, 7).

Seemingly, in the MDG debates only the imagination limits what should be measured. Here, on the contrary, it is suggested that the ambitions in the post-2015 measurement agenda should be tempered by moderation, and an appreciation of the resources actually required supplying the data demanded.

How much would the previous MDG data have cost? In order to have any idea of whether infant mortality, access to clean water, or monetary poverty, or any other indicator has increased or decreased, you first need to have a valid baseline measure. The instrument used for this purpose is a population census. With the subsidiary information collected in a population census you can not only draw direct information used for social and economic development indicators, but you also have a representative sampling frame that can be used to conduct smaller surveys in following years. Reporting on MDG indicators has been done on annual basis, so this means that you would have to have an update of the baseline (a census) every ten years, an annual smaller survey, and more sizeable surveys every five years or so to get reasonably accurate reporting on MDG progress.

According to the best estimates available, the total cost for solely supporting the MDG surveys from 1990 to 2015 would have been \$27 billion. Or, just to provide survey data

needed to fill the MDG database with annual observations would have cost more than the total amount Denmark spent on Official Development Assistance from 1995 to 2010.¹

It should be emphasized that the \$27 billion estimate is a proxy costing of monitoring of the original MDG agenda, and not an actual record of the expenditures on MDG monitoring. MDG 1 for instance requires monitoring of the poverty headcount typically through a Living Standard Measurement Survey.

While we demand these data to be available, and generally assume that they are, they do not exist for many countries in sub-Saharan Africa. According to one report, six of the 49 countries in sub-Saharan Africa have never had a household survey and only 28 countries have been surveyed in the past 7 years. A similar gap in coverage persists in surveys for social indicators, such as Multiple Indicator Cluster Surveys and Demographic and Health Surveys, and only about 60 countries in the world have vital registrations systems required to monitor basic trends in social indicators (Jerven, 2014a). In other words, monitoring of all indicators in all countries did not take place – partly due to insufficient funds.

Currently, an even more ambitious agenda for data and development is being put forward. This agenda would either widen the gap between the ambitions and realistic achievements, or it will have to mean a dramatic increase in the allocation of development spending towards statistics. I will discuss the costs and benefits of ‘bad’ and ‘good’ data in the following section, but this paper will first lay out how we reached the estimate costs of the previous MDG and suggest how much the Post-2015 data agenda may cost.

Methodology

The total figure was reached by estimating the costs of providing annual data from the most widely used survey methods, in addition to establishing benchmark data with a population census. The estimate has a number of caveats, including but not limited to:

- i. Cost information for surveys is sparse and hard to come by, and in many cases it is purposefully not made public. The costing suggested here relies heavily on guesswork and extrapolation from known costs.
- ii. In reaching the estimate we made the crucial and unrealistic assumption that existing statistical capacity in these regions was sufficient to support this survey measurement, and thus:
- iii. Administrative costs of running and expanding the statistical capacity would be in addition to this figure suggested here. The number proposed here is closer to a marginal cost of the MDGs. Note that the number also does not take into account the negative costs – such as when other statistical capacity (such as macroeconomic

¹ According to OECD, QWIDS, Query Wizard for International Development Statistics.

statistics, labour statistics, agricultural statistics) has been depleted, with resources being prioritized towards MDG measurement.

- iv. The final estimate is conservative. I picked the lower end of all guesses, but there is also evidence that costs might be much higher. I think the conservative estimate is high enough to make a reconsideration of the data demands in the post-2015 debate necessary.

Broadly speaking, the post-2015 MDGs have more survey requirements in order to be measured properly, and this will result in an increased cost.

To systematically examine the MDGs indicator by indicator it is first necessary to distinguish between Administrative and Survey data. In the case of Administrative data – which is defined as readily accessible information which are regularly collected by the governments due to its day to day operations – the cost burden is born solely by the governments’ existing mechanisms, but collection, aggregation, reporting and dissemination is still resource demanding. For the purposes of this exercise, the marginal cost of supplying administrative data has not been calculated.

One of the objectives of a data revolution might be to shift the balance in data collection from survey to administrative data – but that would require matching resources on the regular capacity of these offices to handle increased demand for collecting, harmonizing and disseminating administrative data. By comparison, according to PARIS21 – the OECD-based secretariat tasked with oversight on statistical development – \$2.3 billion was allocated for statistical development worldwide during the period of 2010-2012 (PARIS21 2012). If the same annual average amount would have been spent over the 25 year period (1990-2015), it would have amounted to about \$19 billion.

In contrast, for the survey data– which is defined as an ad hoc data collection exercise done to fill a specific information demand which may or may not be recurring –there is an active and concerted effort (with a measurable cost) to collect the data for the indicators.

Table 1 summarizes these information access categories for each MDG indicator. Whether the data is primarily or typically collected from administrative or survey systems does vary from country to country, and as a general rule, in countries with weaker capacity in state administration, data are necessarily drawn from survey sources rather than administrative sources. The objectivity of the data is generally believed to be higher in survey data. It has been well documented that in poor countries data on improvements in—for instance--agricultural production, health and education tend to be overstated in the administrative data (Jerven 2013).

In 2008, there were 60 MDG indicators in effect (United Nations 2008), the majority of them being survey data. Some of them, like schooling (for instance 2.1, 2.2, 2.3) or health indicators such as mortality and number of births (indicators through 4.1-4.3 and 5.1-5.6) are sometimes provided as administrative data, but they are classified as survey data here because they are phrased as ‘proportion of...’ which makes reference to a universal, valid population measure. In practice, administrative education and health data and civil statistics are drawn from medical institutions, line ministries and official registered births and deaths. When schooling and health has limited reach, only a marginal share of the population is registered in civil registries and only a small proportions of deaths and births are covered by vital statistics systems, these should be considered survey data for all practical purposes. In sum, this leaves GDP growth, share of seats in parliament held by women, data on CO2 emissions, environmental sustainability (indicators 7.1 through 7.7) and data on global partnerships for development under Goal 8 as administrative goals. The majority of the list’s indicators are resource intensive survey data, which countries in the bracket below \$1500 GDP per capita will have a great difficulty in supplying without direct donor interest and funding.

Table 1: Indicator List by Information Access Type

Information Access		
Type	Indicators	Total
Administrative	1.4, 3.3, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9, 8.10, 8.11, 8.12	21
Survey	1.1, 1.2, 1.3, 1.5 1.6, 1.7 1.8, 1.9, 2.1, 2.2, 2.3, 3.1. 3.2, 3.3, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 7.8, 7.9, 7.10 8.13, 8.14, 8.15 8.16	49
		60

The administrative costs are ignored and instead the focus is on costing the required surveys and population censuses. These are the most commonly used standardized surveys used to collect development data across the world (detailed descriptions in Appendix B):

1. Population Census - As every survey requires a sampling frame, the only way to achieve this is to take an initial census, which would precede the surveys indicated, and would need to be updated every ten years.
2. Living Standards Measurement Study – LSMS- Created as a way of monitoring policy-based decisions and assessing their effects on a national scale, to better

inform policy makers. Administered by the Development Research Group. The standard source of monetary poverty data.

3. Demographic and Health Surveys – DHS - The DHS household surveys focusing on population, health, and nutrition, and is one of the most prolific global household surveys. They are funded by USAID and administered by Measuring DHS.
4. Core Welfare Indicator Questionnaire - CWIQ - A pre-packaged survey administered by the World Bank that is designed to monitor social indicators globally, with a proven track record in Africa. The CWIQ is developed to show who is, and who is not, benefitting from actions designed to improve social and economic conditions.
5. Multiple Indicator Cluster Surveys – MICS- Developed by UNICEF, is meant to work in concert with other survey measurement types (e.g. DHS) to coordinate survey taking. Very adaptable, MICS has seen an increase in usage and awareness in recent years.

A suggestion for the minimum data requirements were as follows:

- Population census every 10 years
- Demographic and Health Surveys every 5 years
- Living Standards Measurement Study every 5 years
- Core Welfare Indicator Questionnaire annually

In addition we wanted to add an annual Multiple Indicator Cluster Survey, but as discussed below, cost data were not available on this survey instrument, and was therefore not included in our analysis that gave the \$27 billion estimate.

The final step was to provide a cost estimate for these surveys. This proved to be quite challenging. Apparently, there has been low demand for the cost of development data, and when attempting to get the financial figures for the different survey types we encountered we found them to be largely unavailable or undisclosed, indicating an overall lack of transparency. The reasoning for this was generally one of the following:

1. The information is considered sensitive, and thus closely guarded by the survey administrators in light of the bidding process in the tender for the data collection, and;
2. Financial records were never kept – estimates or exact figures – because of various ‘in kind’ contributions or the efforts of the domestic governments with whom the survey administrators partner to do their research.

I made full use of the data available to us, adding information from alternate sources and using different methods to help fill in the gaps. In result we have arrived at some estimates for the cost of the MDGs measurement requirements until today (1990-2015), and this may serve as a benchmark to project future costs. Although there are caveats to this research, I still maintain some confidence in these ‘back of the envelope’ costs analysis. Of course, with full information on the costs of all the surveys needed, or even better, combined with a full record of funds committed to data collection, we could have had a complete picture of the funds needed versus the funds actually earmarked for data collection.

Results

Since the costs of censuses are based on talking to people and the cost of surveys are based on samples, population size is the key determinant – there are other costs, but these were ignored in the following.² Table 2 below gives a summary of the costing for small, medium and large countries for the different survey types. The full country list for all 138 countries is found in Appendix C.

Table 2 Population Survey Estimated Costs

Estimated Costs			
	Small Population	Medium Population	Large Population
Population range: (WDI Database 2012)	1 - 5 Million	5 - 20 Million	20+ Million
Census (every 10 years) (VSS 2014)	\$1/ Person	\$2/Person	\$3/Person
LSMS (every 5 years) (Sette 2008; United Nations 2005, 534; Randramamoni 2008, 1; United Nations 2013c)	\$0.4 Million	\$0.9 Million	\$1.5 Million
DHS (every 5 years) (Yansanch 2000, 771; Rommelmann 2005, 20; WHO 2009, 2)	\$0.8 Million	\$1 Million	\$1.2 Million
CWIQ (annually) (PARIS 21 2000, 24; Sette 2008)	\$330,000/ Year	\$500,000/ Year	\$665,000/ Year
MICS (annually)	Financial data not disclosed. No estimates available.		

² For example a country with rugged terrain, with low literacy levels or weak infrastructure would be much more difficult to survey.

The final total cost estimate we reached was approximately \$27 billion.

A rule of thumb for census costs in developing countries has been \$1 USD per enumerated person, more realistic figures today may be around \$3 USD (VSS, 2014). As noted in the introduction, censuses may be more expensive for some countries. India and China have had relatively cheap censuses, at about 40 cents and a dollar per capita cost respectively. By contrast the censuses in Canada have cost from 16 to 20 dollars per capita since 1991 and in the US the per capita cost has risen from about 5 dollars in 1970 to 10 in 1980, 13 in 1990 and 23 in 2000 (Yacyshyn and Swanson, 2011, 21). Larger countries, with the exception of India and China, do seem to have more expensive censuses (per capita) than the smaller ones. Presumably this is because in larger countries some parts on the population are harder to reach. In the cost estimation we used the actual costs – which were found for 67 of the countries (the details are available in Appendix B).

As noted – the estimates and the total measurement costs faced some information restrictions. Measure DHS does not release budgetary information for fear of competitive bidding, despite repeated requests for such cost data.³ Aside from the total costs of the organization in select years, cost extrapolations are only possible thanks to third part information (Yansanch 2000, 771; Rommelmann 2005, 20; WHO 2009, 2). I have used lower and upper of typical costs of a DHS on small and large countries, and used the typical cost for a medium country. The costs of the LSMS are best documented. I have precise country data sometimes (United Nations 2005, 534). CWIQ's official handbook (administered by the World Bank) lists a cost of \$330,000 per study for a sampling of 10,000 households as being the norm.⁴ However, our research uncovered that the sampling range varied widely – between 3,600 and 77,400 households (IHSN 2014). Therefore, our adjustments for the CWIQ needed to take into the account the uppermost limit of CWIQ sampling size. To do so, I developed an estimated real world CWIQ cost using these extrapolated samples as guides, finding an upper limit to be \$665,000/study (largest populations), a lower limit of the original figure of \$330,000/study (smaller populations), and a 'middle of the road' estimate of \$500,000/study (medium-sized countries). Further cost clarification was not provided after multiple World Bank information requests. Finally, MICS (administered by UNICEF), does not record either a per household cost or a total average cost, even on the level of rough estimates⁵, which makes estimation impossible – so it is excluded, and instead I assumed the cost of having an annual CWIQ would be sufficient.

³ As informed per correspondence by email with Susan McInturff and Martin Vaessen of Measure DHS, January 15th 2014 and January 27th, respectively

⁴ With a special reference to the CWIQ study, although the World Bank CWIQ handbook listed a 10,000 household study and \$330,000 yearly cost, we found household sample averages for medium and large sized population countries to be higher, and have adjusted our costs accordingly to better represent the reality of the CWIQ surveys previously taken.

⁵As informed per email correspondence and telephone conversation with Tara Moayed of UNICEF, January 30th 2014

As indicated in the source tables, I have strived to include known survey/census sampling and cost figures wherever possible. These included 9 CWIQ surveys, 38 LSMS surveys, 6 DHS surveys, and 68 censuses. Please see Tables in Appendix D for a detailed breakdown, per country, of our cost estimates for total MDG measurement.

With this rough estimation the total amount overshoots what is currently being earmarked for statistics in development assistance by quite a distance.

The \$27 billion amount would be an underestimate for a couple of reasons. First of all, we are inferring observed costs of running a DHS and LSMS in Ghana and Tanzania and projecting that to countries like Sudan and Democratic Republic of Congo which have not yet been measured. There is a reason why some countries are surveyed on a regular basis, while for other countries no data are available. Second, it does not take into account that some data would be missing. Administrative data are not included, and a range of statistics that need to be collected for calculating GDP is not allowed for in this calculation. Thirdly, and most importantly, there is no allowance for maintaining the statistical office, training and retaining personnel, analyzing and disseminating the data and so forth... There is ample evidence that the MDG agenda has already stretched statistical capacity and strained statistical offices in poor countries (Jerven 2013). Or, as it was summarized by Richard Manning, formerly of DAC-OECD in a DIIS report (Manning 2009, 38):

It is not clear that the expanding number of surveys and data collection exercises has had a positive and sustainable impact on local capacity. It is quite possible that we are in fact seeing a growing mismatch between the multiple demands for monitoring and the ability of local systems to generate credible data. There is a danger that an 'MDG Results Industry' could consume a lot of resources to rather little effect.

The new proposed list for the post-2015 list is likely to stretch this gap even further. The post-2015 debate has so far been dominated by what goals and targets are desired, and as of yet there has been less discussion about what can be realistically measured, what kind of indicators might be needed and even less consideration given to who should pay for the measurement. One could take the view that right now the concern should not be 'how much does it cost', but rather first determine 'what do we need', and then later on figure out 'how do we pay for it'. I strongly suspect that the latter will be the ad hoc approach taken, but I would not recommend such an approach. The cost of monitoring should be taken into account. It is not the case that all increases in measurement activities are improvements in

overall statistical capacity. Provision of data has opportunity costs, and provision of data further has behavioral implications.

The Benefits of Good Data and Costs of Bad Data

It is not feasible to address, much less quantify in dollars and cents, the potential upside and the potential costs of each and every of the targets in the different focus areas suggested by the Open Working Group. Instead I will suggest a broad typology for thinking through the potential benefits of good data and also the costs of providing bad data.

Benefits of Good Data

An example from fiscal spending in Uganda demonstrates this very clearly. Reineikka and Svenson report that surveys of central government expenditures on primary schools in Uganda between 1991 and 1995 showed that only 13 per cent of the funds allocated actually reached the schools. In response, a campaign was started to advertise in local newspapers how much public funding was allocated to the schools, thus enabling local schools to compare these with actual funds received. It was estimated that this intervention reduced graft considerably, and that by 1999, 90 percent of the funds reached their destination (Reinikka and Svenson 2001). Quality in the production and dissemination in data is crucial to the accountability policy process.

This is a good example of what good data can do. However, it is not really a demonstration of the value of the kind of data on outcomes that is likely to be the core of post-2015 monitoring. It is unlikely that the statistical office will get the necessary funds and political support needed to play this role in the Measurement Agenda in the MDGs. Most indicators are geared towards monitoring very specific progress. Governments need disaggregated, high frequency data linked to sub-national units of administrative accountability. The emphasis in the MDG is on global standards and international comparability. An emphasis on monitoring progress towards on an indicator that support donor goals X, Y, Z one essentially lowers the fungibility of the statistics. That means that one may ask, and even fund a statistical office to monitor a specific indicator, but it is not certain that this indicator is useful for the line ministry of the country concerned.

A good example is poverty headcount data. These data are essential for the international discourse on the relationship between poverty, economic growth and feeds into long term strategic plans and documents. Day to day policy work at the Ministry of Finance and Central Banks, who do work which is essential for long term trends in poverty, need monthly data on employment and inflation. Of course, the poverty data make important baselines and put short term policy planning into a long term perspective, but the danger is that donor preference for global comparable data comes at the expense of reliable high frequency data needed at the local level.

I suggest that the list of indicators should be designed with the view of directly increasing accountability directly, and that one way of assessing indicators and the data needs is not only the costing of them, but also the likelihood that they can be provided in a timely fashion, and in a form that makes the data useable for domestic policy making and that are digestible for media and civil society to further policy debates and accountability.

Costs of Bad Data

Increase in demand for data may also be met by a supply of inferior data. This is very likely if two things coincide: 1) if the demand for data overshoots supply of reliable data and 2) if the data provision process is incentivized through rewards and punishments for meeting certain targets. Unfortunately, very often both of these conditions were met in the previous MDG agenda.

There is evidence showing that “results-based financing can have undesirable effects, including motivating unintended behaviors, distortions (ignoring important tasks that are not rewarded with incentives), gaming (improving or cheating on reporting rather than improving performance), widening the resource gap between rich and poor, and dependency on financial incentives” (Oxman and Fretheim 2009, 70).

This is why one needs to be careful in responding to calls for increased ‘accountability’ in measurement and ‘paying for results’ to achieve the Millennium Development Goals. This will be harmful if one does not take into account the fundamental weaknesses of the evidence and the fragility of the statistical infrastructure that is tasked with providing proof of the targets being met or not (Jerven 2013, Jerven 2014b).

Sandefur and Glassman present a very clear case of the potential pitfalls of incentivizing data. They look at Kenyan education data. The Ministry of Education’s administrative data indicate a steady increase in primary enrollment rates, and furthermore that there is a big jump upward in 2003. In 2003 Kenya abolished all school fees in primary schools. They compare these administrative data with survey data which paints a very different picture. Figures from the Kenyan National Bureau of Statistics (KNBS) and the Demographic and Health Survey (DHS) show enrollment rates that are completely flat over the same time period.

Why did administrative data differ so much from survey data? The key difference is administrative data are collected from school administrators, whereas the survey data is collected from heads of households in surveys. Sandefur and Glassman argue that when Ministry of Education abolished primary school fees it changed the incentives for truthful

reporting by head teachers. Schools get allocated more teachers and more funding if they report more pupils and therefore schools have an incentive to exaggerate their numbers. The same problem applies to vaccination programs and fertilizer projects (Jerven, 2013).

The cost and benefit of the Post-2015 Agenda

It has been challenging to come up with a cost of the MDGs if they would have been properly measured with valid baselines and reliable annual data updates. It is even more hazardous to venture a guess of what the potential cost of data for the post 2015 list would be. The rule of thumb suggested here would be about \$ 1.5 billion per target.

The best guess, judging from the list currently being discussed by the OWG, would be about 169 targets – compared to 18 targets in the previous MDG agenda. The roughest way of estimating a cost is to assume a proportional increase in costs. In some areas providing more indicators may have lower marginal costs once a baseline and annual survey capacity has been set up. On the other hand, surveying in completely new areas – such as to generate data for governance indicators or providing regionally disaggregated data may result in higher than proportional costs.

In the costing of the 18 MDG targets it was assumed that you only needed a population census, a household budget survey every five years, a demographic health survey every five years and annual survey to update on basic health, education and living standard metrics. The 169 new targets also include areas such as agriculture, industry and employment (UN 2014). To ensure validity and reliability in measurement, one would need agricultural censuses and economic censuses with annual surveys of the labor force, industrial and agricultural sectors. There are furthermore indicators that mention industrial share in GDP and the pace of economic growth (7%) – with the well-known measurement problems of GDP (Jerven 2013) – and in particular the largely unmeasured informal economy, such as unrecorded activities in construction, transport and trade sectors. There are very expensive and time consuming data requirements that need to be fulfilled for the post-2015 agenda.

Assuming constant marginal cost may indeed be an understatement, as the basic capacity of the statistical offices would have to be greatly expanded to collect, collate, aggregate, disaggregate, analyze and disseminate all these new statistical priorities.

Part of the attractiveness of the data revolution is of course that it is believed and hoped that technological innovation may enable cheaper, more frequent and more refined data. I think that this is true for some very specific areas. But typically big data innovations benefit from already existing information structures and makes use of algorithms to analyze patterns in passive data exhaust. Google Flue Trends is the prime example, and while their

data have been cheaper and timelier, the data have also been off and incompatible with administrative structures (Harford, 2014). Therefore it is currently unclear what direct benefits Big Data can have for MGD monitoring – and more importantly for this exercise. In order for most low income countries to benefit, it would require substantial investment in data infrastructure and human capital to make such a change. In sum, it seems most prudent to assume similar costs for the future.

If 18 targets from MDGs cost \$27bn, 169 targets would roughly amount to \$254bn for the 2015-2030 MDG round. That is a big number. It is almost twice the annual global total spent on Official Development Assistance in any recent year. It thus seems that the emphasis on measurement in the post-2015 agenda needs a radical change. Are development donors prepared to commit almost two annual ODA budget to measure the effect of development efforts? In 2013 the ODA, as reported by OECD, was \$135 billion, and the Danish ODA was \$2.8 billion. The table below uses the \$1.5 billion per target rule and works out some ratios to be spent on measurement under different scenarios.

# Targets	% Share of ODA	# Danish ODA Budgets
5	0.4	3
10	0.7	5
20	1.5	11
50	3.7	27
100	7.4	54
150	11.1	80
200	14.8	107
250	18.5	134

The real question is – if we are serious about actually measuring the targets – how much do we want to spend on data? At 169 targets, we are looking at spending 12.5 percent of all the ODA in the period 2015-2030 on getting data – or 90 times what Denmark spends on aid annually.

To put this in perspective, one could consider what other operations normally spend on statistics or measuring the effect of their activities. Small volunteer charity organizations, like a soup kitchen, will in all likelihood have no impact measurement budget. The organization would contend that giving out soup is a good thing, but it does not have the mandate or capacity to measure how many hungry people there were before the soup kitchen, or even how many of these hungry people the soup kitchen feeds. Nation states have different measurement requirements, because there need to be decisions not only on decreasing or reducing capacity – but some idea of what total desirable capacity is needed for schools, hospitals and food production. Countries like the centrally planned economies

probably spent a large share on statistics – I do not have information on budgets for these statistical offices, but for a comparison Statistics Norway had a budget of 733 million NOK in 2013. This compares to a total government budget of 324 billion NOK – or a about 0.2 percentage. Thus, if the post-2015 measurement agenda is about as willing as the Norwegian state to spend on statistics, it should recommend and prioritize 3 or 4 targets, not 169.

It is simply not realistic nor desirable that such a large share of the aid budget be spent on measurement. An improvement in measurement would have to go through a gradual expansion in the capacity of national institutions, while large funds for ad-hoc measurement is unlikely to have lasting long term benefits, but very likely to have immediate negative tradeoffs. It is absolutely certain that 169 targets would not be measured appropriately. It is very likely that success and failure in the post-2015 agenda will be measured with deficient and bad data unless the list of targets is radically shortened.

Conclusions

In the 1990-2015 MDG database there were more gaps than observations. The previous agenda suffered from a mismatch between ambition in monitoring and ability in measurement. I have suggested that the previous MDG agenda could have cost something in the vicinity of \$27 billion just in marginal survey cost. It does not take into account the needs for statistical capacity building or the cost of providing administrative data. The post-2015 might be end up being much more expensive.

The potential benefits of more data and better data should be weighed against the very real cost of providing statistics. This is not only a question of sheer financial cost. There are important opportunity costs. If resources at a statistical office are pulled from regular reporting to government institutions towards filling gaps in the global monitoring database, increases in financial funds available for specific measurement projects may actually have unintended negative consequences for the country level capacity to formulate and monitor independent policy.

What would be the benefit if they used an extra \$27bn to get good data in the previous agenda? Or would the benefits of revolutionizing the data supply for the post 2015 period outweigh an allocation of \$254bn? I hazard the guess that the benefit to cost ratio is below one, and that therefore the data revolution as currently envisaged is a bad idea.

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Appendix A: Official list of MDG indicators (United Nations 2008)

Millennium Development Goals (MDGs)	
Goals and Targets (from the Millennium Declaration)	Indicators for monitoring progress
Goal 1: Eradicate extreme poverty and hunger	
Target 1.A: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	1.1 Proportion of population below \$1 (PPP) per day ⁶ 1.2 Poverty gap ratio 1.3 Share of poorest quintile in national consumption
Target 1.B: Achieve full and productive employment and decent work for all, including women and young people	1.4 Growth rate of GDP per person employed 1.5 Employment-to-population ratio 1.6 Proportion of employed people living below \$1 (PPP) per day 1.7 Proportion of own-account and contributing family workers in total employment
Target 1.C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	1.8 Prevalence of underweight children under-five years of age 1.9 Proportion of population below minimum level of dietary energy consumption
Goal 2: Achieve universal primary education	
Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	2.1 Net enrolment ratio in primary education 2.2 Proportion of pupils starting grade 1 who reach last grade of primary 2.3 Literacy rate of 15-24 year-olds, women and men
Goal 3: Promote gender equality and empower women	
Target 3.A: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015	3.1 Ratios of girls to boys in primary, secondary and tertiary education 3.2 Share of women in wage employment in the non-agricultural sector 3.3 Proportion of seats held by women in national parliament
Goal 4: Reduce child mortality	
Target 4.A: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	4.1 Under-five mortality rate 4.2 Infant mortality rate 4.3 Proportion of 1 year-old children immunised against measles
Goal 5: Improve maternal health	
Target 5.A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio	5.1 Maternal mortality ratio 5.2 Proportion of births attended by skilled health personnel
Target 5.B: Achieve, by 2015, universal access to reproductive health	5.3 Contraceptive prevalence rate 5.4 Adolescent birth rate 5.5 Antenatal care coverage (at least one visit and at least four visits) 5.6 Unmet need for family planning

⁶ For monitoring country poverty trends, indicators based on national poverty lines should be used, where available.

Goal 6: Combat HIV/AIDS, malaria and other diseases	
Target 6.A: Have halted by 2015 and begun to reverse the spread of HIV/AIDS	6.1 HIV prevalence among population aged 15-24 years 6.2 Condom use at last high-risk sex 6.3 Proportion of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS 6.4 Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years
Target 6.B: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it	6.5 Proportion of population with advanced HIV infection with access to antiretroviral drugs
Target 6.C: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	6.6 Incidence and death rates associated with malaria 6.7 Proportion of children under 5 sleeping under insecticide-treated bednets 6.8 Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs 6.9 Incidence, prevalence and death rates associated with tuberculosis 6.10 Proportion of tuberculosis cases detected and cured under directly observed treatment short course
Goal 7: Ensure environmental sustainability	
Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	7.1 Proportion of land area covered by forest 7.2 CO2 emissions, total, per capita and per \$1 GDP (PPP) 7.3 Consumption of ozone-depleting substances 7.4 Proportion of fish stocks within safe biological limits 7.5 Proportion of total water resources used
Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss	7.6 Proportion of terrestrial and marine areas protected 7.7 Proportion of species threatened with extinction
Target 7.C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	7.8 Proportion of population using an improved drinking water source 7.9 Proportion of population using an improved sanitation facility
Target 7.D: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	7.10 Proportion of urban population living in slums ⁷
Goal 8: Develop a global partnership for development	
Target 8.A: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system Includes a commitment to good governance, development and poverty reduction – both nationally and internationally	<i>Some of the indicators listed below are monitored separately for the least developed countries (LDCs), Africa, landlocked developing countries and small island developing States.</i> <u>Official development assistance (ODA)</u> 8.1 Net ODA, total and to the least developed countries, as percentage of OECD/DAC donors' gross national income 8.2 Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water
Target 8.B: Address the special needs of the least developed countries Includes: tariff and quota free access for the least developed	

⁷ The actual proportion of people living in slums is measured by a proxy, represented by the urban population living in households with at least one of the four characteristics: (a) lack of access to improved water supply; (b) lack of access to improved sanitation; (c) overcrowding (3 or more persons per room); and (d) dwellings made of non-durable material.

countries' exports; enhanced programme of debt relief for heavily indebted poor countries (HIPC) and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction	and sanitation) 8.3 Proportion of bilateral official development assistance of OECD/DAC donors that is untied 8.4 ODA received in landlocked developing countries as a proportion of their gross national incomes 8.5 ODA received in small island developing States as a proportion of their gross national incomes
Target 8.C: Address the special needs of landlocked developing countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly)	<u>Market access</u> 8.6 Proportion of total developed country imports (by value and excluding arms) from developing countries and least developed countries, admitted free of duty 8.7 Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries 8.8 Agricultural support estimate for OECD countries as a percentage of their gross domestic product 8.9 Proportion of ODA provided to help build trade capacity
Target 8.D: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term	<u>Debt sustainability</u> 8.10 Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points (cumulative) 8.11 Debt relief committed under HIPC and MDRI Initiatives 8.12 Debt service as a percentage of exports of goods and services
Target 8.E: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries	8.13 Proportion of population with access to affordable essential drugs on a sustainable basis
Target 8.F: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	8.14 Fixed-telephone subscriptions per 100 inhabitants 8.15 Mobile-cellular subscriptions per 100 inhabitants 8.16 Internet users per 100 inhabitants

Notes: The Millennium Development Goals and targets come from the Millennium Declaration, signed by 189 countries, including 147 heads of State and Government, in September 2000 (<http://www.un.org/millennium/declaration/ares552e.htm>) and from further agreement by member states at the 2005 World Summit (Resolution adopted by the General Assembly - A/RES/60/1, <http://www.un.org/Docs/journal/asp/ws.asp?m=A/RES/60/1>). The goals and targets are interrelated and should be seen as a whole. They represent a partnership between the developed countries and the developing countries “to create an environment – at the national and global levels alike – which is conducive to development and the elimination of poverty”.

Appendix B

This Appendix presents a summary of the principal survey types encountered, a brief description of their origins and administration, and a selection of some of the questions typically asked of respondents. Additionally, costing and logistical information (where possible) is included, as well as admissions of estimation where it was deemed both necessary and practical – for example our extrapolation of CWIQ costs based on known sampling sizes of past CWIQ surveys.

Demographic and Health Surveys - DHS

The Demographic and Health Surveys (DHS) are nationally representative household surveys that provide data for a wide range of monitoring and impact evaluation indicators in the areas of population, health, and nutrition. They are funded by USAID and administered by Measuring DHS. They are performed in one of two varieties:

- 1.) Standard: Have a large sample size (5,000-30,000 household units) and are performed every five years to allow data comparison.
- 2.) Interim: A much smaller, varying sample of households, and is meant to be supplemental to the standard survey. Performed at the discretion of Measuring DHS/USAID (Measure DHS 2014).

Table 3.1 DHS Survey question topic examples:

Anemia	Infant/Child Mortality
Child Health	Malaria
Domestic Violence	Maternal Health
Education	Fertility and Fertility Preferences
Environmental Health	Gender/Domestic Violence
Family Planning	HIV Knowledge/Attitudes
Female Genital Cutting	HIV Prevalence

Table 3.2 Summary of the DHS Survey's general logistics (Yansanch 2000, 771; Rommelmann 2005, 20; WHO 2009, 2):

Demographic & Health Surveys	
	DHS
Number of households surveyed	Between 5,000 and 30,000
Cost per household	Per Participant, as only women of a certain aged are targeted= \$19.57
Total cost	Between \$0.8 and \$1.2 Million (Best estimate, as DHS costs are not released on a country to country basis) ⁸
Survey Time	18-20 Months

⁸As informed per correspondence by email with Susan McInturff and Martin Vaessen of Measure DHS, January 15th 2014 and January 27th, respectively

Core Welfare Indicator Questionnaire - CWIQ

An 'off-the-shelf' survey set administered by the World Bank, the CWIQ uses a structured questionnaire and probability-based samples. Developed jointly by the World Bank with UNDP and UNICEF the CWIQ is designed to monitor social indicators in Africa on an annual basis. The CWIQ is developed to show who is, and who is not, benefitting from actions designed to improve social and economic conditions. The CWIQ collects (i) indicators of household well being; and, (ii) indicators of access, usage and satisfaction with community and other basic services. It draws extensively from market research methodologies to monitor development objectives. Leading indicators play a major role in the CWIQ measurement style, especially in regards to economic factors (World Bank 2014a).

Table 3.3 CWIQ Survey question topic examples:

Household Roster (all de jure household members)
Children Roster (less than or equal to 5 years old)
Household and other amenities
Assets
Consumption correlates

Table 3.4 Summary of CWIQ Survey's general logistics (PARIS 21 2000, 24; Sette 2008):

Core Welfare indicator Questionnaires	
	CWIQ
Number of households surveyed	1000 (Pilot) --> 10,000 (2nd Year)
Cost per household	\$54 (Pilot) --> \$33 (2nd Year)
Total cost	\$54,000 (Pilot) --> \$330,000 to \$665,000 (Estimated maximum, further information not available)
Survey Time	2-3 Months

Living Standards Measurement Study – LSMS

The Living Standards Measurement Study (LSMS) and the Living Standards Measurement Study-Integrated Surveys on Agriculture (LSMS-ISA) were established by the Development Research Group (DECRG) to explore ways of improving the type and quality of household data collected by statistical offices in developing countries. The goal is to foster increased use of household data as a basis for policy decision-making. The program is designed to assist policy makers in their efforts to identify how policies could be designed and improved to positively affect outcomes in health, education, economic activities, housing and utilities, etc (World Bank 2014b).

Table 3.5 LSMS Survey question topic examples:

Household residents	Monetary Assets
Head of household information	Land Ownership
Dwelling information	Animals Owned
Rent and other household costs	Farming Equipment owned
Nutrition	Businesses invested in/started
Sources of Income	Appliances owned/rented
Employment	Vehicles owned/rented

Table 3.6 Summary of LSMS Survey's general logistics (Sette 2008; United Nations 2005; Randramamony 2008, 1; United Nations 2013c):

Living Standards & Measurement Surveys	
LSMS	
Number of households surveyed	3,200
Cost per household	\$170
Total cost	Between \$0.4 and \$1.5 million
Survey Time	2 Years

Multiple Indicator Cluster Surveys – MICS

The MICS survey tools were developed by UNICEF after consultations with relevant experts from various UN organizations as well as with interagency monitoring groups. UNICEF works closely with other household survey programmes, in particular the Demographic and Health Surveys (DHS), to harmonize survey questions and modules and to ensure a coordinated approach to survey implementation, with the objective to provide comparability across surveys and to avoid duplication of efforts. The survey questionnaires are modular tools that can be adapted to the needs of the country. MICS surveys are typically carried out by governments, with the support and assistance of UNICEF and other partners, the makeup of which varies depending on which country is being surveyed. Technical assistance and training for the surveys is provided through a series of regional workshops where experts from developing countries are trained on various aspects of MICS (UNICEF 2014).

Table 3.7 MICS Survey question topic examples:

Births/Deaths	Sanitation facilities
Primary school enrollment	Fresh/safe water access
HIV prevalence/infection rate	Dehydration issues
Learning support/funding	Vaccination data
Breastfeeding information	Pneumonia rates
Child growth rates	Malaria Rates
Weight related information	Polio Rates

Table 3.8 Summary of MICS Survey’s general logistics(UNICEF 2014; ChildInfo 2014):

Multiple Indicator Cluster Surveys	
MICS	
Number of households surveyed	10,000 ⁹
Cost per household	Data not calculated by UNICEF
Total cost	Data not calculated by UNICEF
Survey Time	One Year per Survey

⁹ As informed per email correspondence and telephone conversation with Tara Moayed of UNICEF, January 30th 2014

Appendix C

Table 4.1 MDG Time Period (1990-2015) Overall costs, Small Country (0-5m)

Sao Tome and Principe	\$14.63 M
Samoa	\$14.63 M
Barbados	\$14.82 M
Belize	\$14.9 M
Maldives	\$14.93 M
Cape Verde	\$15.24 M
Suriname	\$21.65 M
Montenegro	\$15.49 M
Comoros	\$15.69 M
Equatorial Guinea	\$15.72 M
Bhutan	\$15.73 M
Guyana	\$24.79 M
Djibouti	\$22.01 M
Fiji	\$28.25 M
East Timor	\$22.18 M
Swaziland	\$18.13 M
Mauritius	\$16.83 M
Bahrain	\$17.45 M
Trinidad and Tobago	\$180.25 M
Gabon	\$17.52 M
Guinea-Bissau	\$17.58 M
Gambia, The	\$26.25 M
Kosovo	\$44.7 M
Botswana	\$84.85 M
Latvia	\$24.25 M
Lesotho	\$14.38 M
Macedonia, FYR	\$52.25 M
Namibia	\$206.25 M
Jamaica	\$2814.48 M
Mongolia	\$19.84 M
Armenia	\$16.43 M
Lithuania	\$20.22 M
Albania	\$56.25 M
Kuwait	\$20.75 M
Uruguay	\$21.04 M
Moldova	\$20.15 M
Mauritania	\$21.84 M
Panama	\$50.91 M
Bosnia and Herzegovina	\$71.28 M
West Bank and Gaza	\$31.45 M
Liberia	\$20.15 M
Croatia	\$45.75 M
Congo, Rep.	\$22.92 M
Lebanon	\$23.1 M
Georgia	\$23.27 M

Central African Republic	\$23.3 M
Costa Rica	\$21.45 M

Table 4.2 MDG Time Period (1990-2015) Overall costs, Medium Country (5-20m)

Turkmenistan	\$42.94 M
Kyrgyz Republic	\$44.58 M
Sierra Leone	\$36.85 M
Nicaragua	\$45.64 M
Eritrea	\$46.77 M
Libya	\$46.87 M
El Salvador	\$47.44 M
Jordan	\$47.52 M
Togo	\$48.82 M
Lao PDR	\$48.83 M
Paraguay	\$42.25 M
Papua New Guinea	\$47.35 M
Serbia	\$53.61 M
Bulgaria	\$49.21 M
Honduras	\$53.99 M
Tajikistan	\$50.17 M
United Arab Emirates	\$58.25 M
Azerbaijan	\$26.21 M
Belarus	\$60.11 M
Burundi	\$61.65 M
Benin	\$41.05 M
Haiti	\$38.25 M
Somalia	\$63.03 M
Dominican Republic	\$63.36 M
Bolivia	\$122.25 M
Tunisia	\$65.36 M
South Sudan	\$220.25 M
Cuba	\$67.33 M
Guinea	\$68.06 M
Rwanda	\$64.85 M
Chad	\$82.25 M
Zimbabwe	\$54.25 M
Senegal	\$77.15 M
Zambia	\$78.55 M
Mali	\$28.55 M
Cambodia	\$37.75 M
Guatemala	\$68.25 M
Ecuador	\$83.95 M
Malawi	\$47.68 M
Burkina Faso	\$86.34 M
Kazakhstan	\$34.4 M
Niger	\$89.5 M

Chile	\$86.25 M
Cote d'Ivoire	\$98.22 M

Table 4.3 MDG Time Period (1990-2015) Overall costs, Large Country (20+m)

Sri Lanka	\$152.07 M
Angola	\$430.1 M
Romania	\$177.2 M
Cameroon	\$160.3 M
Madagascar	\$163.86 M
Syrian Arab Republic	\$164.5 M
Yemen, Rep.	\$166.1 M
Korea, Dem. Rep.	\$178.68 M
Mozambique	\$189.66 M
Ghana	\$134.04 M
Nepal	\$191.55 M
Saudi Arabia	\$199.83 M
Malaysia	\$152.1 M
Uzbekistan	\$208.76 M
Afghanistan	\$118.1 M
Venezuela, RB	\$176.1 M
Peru	\$206.88 M
Morocco	\$220.55 M
Iraq	\$233.99 M
Uganda	\$149.02 M
Sudan	\$253.27 M
Algeria	\$94.1 M
Poland	\$261.36 M
Argentina	\$276.62 M
Kenya	\$180.1 M
Ukraine	\$303.66 M
Colombia	\$316.33 M
Tanzania	\$162.96 M
Korea, Rep.	\$344.1 M
South Africa	\$398.25 M
Myanmar	\$147.1 M
Congo, Dem. Rep.	\$424.33 M
Thailand	\$430.81 M
Turkey	\$474.08 M
Iran, Islamic Rep.	\$170.1 M
Egypt, Arab Rep.	\$78.1 M
Vietnam	\$99.12 M
Ethiopia	\$576.35 M
Philippines	\$610.34 M
Mexico	\$530.1 M
Russian Federation	\$889.32 M
Bangladesh	\$114.1 M

Nigeria	\$1824.93 M
Pakistan	\$1101.64 M
Brazil	\$1844.8 M
Indonesia	\$1511.29 M
India	\$746.51 M
China	\$2037.26 M

Appendix D

CWIQ Known Samples*			
Country	#Households surveyed*	Cost per Household	Cost (x25 for MDG)
Burkina Faso	9,000	Medium, ∴ \$50/household	\$450,000
Ghana	14,700	Large, ∴ \$66.5/household	\$977,550
Lesotho	5,200	Small, ∴ \$33/household	\$171,000
Liberia	3,600	Small, ∴ \$33/household	\$118,800
Malawi	10,593	Medium, ∴ \$50/household	\$529,650
Mozambique	15,500	Large, ∴ \$66.5/household	\$997,500
Nigeria	77,400 * Largest CWIQ on Record	Large, ∴ \$66.5/household	\$5,147,100
Sierra Leone	7,800	Medium, ∴ \$50/household	\$390,000
Tanzania	13,500	Large, ∴ \$66.5/household	\$897,750

***Confirmed through the International Household Survey Network (ISHN)**

[http://catalog.ihsn.org/index.php/c](http://catalog.ihsn.org/index.php/catalog)

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LSMS Known Surveys*			
Country	#Households surveyed*	Cost per Household	Cost (x5 for MDG)
Armenia	4,920	\$170	\$836,400
Azerbaijan	2016	\$170	\$342,720
Bosnia and Herzegovina	3,562 (average of 4 surveys)	\$170	\$605,540
Brazil	4,940	\$170	\$839,800
Bulgaria	2,928 (average of 5 surveys)	\$170	\$497,760
China	780	\$170	\$132,600
Cote d'Ivoire	1,597 (average of 4 surveys)	\$170	\$271,490
Ecuador	5,267 (average of 3 surveys)	\$170	\$895,390
Ethiopia	3,969	\$170	\$674,730
Ghana	4,240 (average of 4 surveys)	\$170	\$720,800
Guatemala	7,940	\$170	\$1,349,800
Guyana	5,340	\$170	\$907,800
India- Uttar Pradesh + Bihar	2,250	\$170	\$382,500
Iraq	18,144	\$170	\$3,084,480
Jamaica	2,623 (average of 14 surveys)	\$170	\$445,910
Kazakhstan	1,996	\$170	\$339,320
Kosovo	2,880	\$170	\$489,600
Kyrgyz Republic	2,473 (average of 4 surveys)	\$170	\$420,410
Malawi	11,755 (average of 2 surveys)	\$170	\$1,988,350
Morocco	3,323	\$170	\$564,910
Nepal	4,828 (average of 3 surveys)	\$170	\$820,760
Nicaragua	4,915	\$170	\$835,550
Niger	3,968	\$170	\$674,560
Nigeria	5,000 (average of 2 samples)	\$170	\$850,000
Pakistan	4,800	\$170	\$816,000
Panama	6,663 (average of 3 samples)	\$170	\$1,132,710
Papua New Guinea	1,396	\$170	\$237,320
Peru	5,120	\$170	\$870,400
Romania	36,000	\$170	\$6,120,000
Russian Federation	6,500	\$170	\$1,105,000
Serbia	4,831 (average of 3 surveys)	\$170	\$821,270
South Africa	9,000	\$170	\$1,530,000

Tajikistan	3,141 (average of 4 surveys)	\$170	\$533,970
Tanzania	4,134 (average of 3 surveys)	\$170	\$702,780
Timor-Leste (East Timor)	1,800	\$170	\$306,000
Uganda	2,851 (average of 3 surveys)	\$170	\$484,670
Viet Nam	12,378 (average of 4 surveys)	\$170	\$2,104,260

***Confirmed through the International Household Survey Network (ISHN) and World Bank Dataset Archive**

<http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,,contentMDK:21485765~menuPK:4196952~pagePK:64168445~piPK:64168309~theSitePK:3358997~isCURL:Y,00.html>

--> LSMS Datasets

2

Known Censuses*

Country	Using our Estimate Formula (this figure later multiplied by 2 to indicate two censuses)	Census Reported Cost (this figure later multiplied by 2 to indicate two censuses)	Source
Angola (2014)	\$62.46 M	\$200. M	http://tinyurl.com/oluy5du http://tinyurl.com/q4ap4ym
Suriname (2011)	\$.53 M	\$3.7 M	http://tinyurl.com/op9ws24
Guyana (2012)	\$.8 M	\$4. M	
Djibouti (2009-2013 range)	\$.86 M	\$3.88 M	http://tinyurl.com/psqfqv5 http://tinyurl.com/ppewu3r
Fiji (2007)	\$.87 M	\$7. M	
East Timor (2010)	\$1.21 M	\$4.2 M	http://tinyurl.com/qffo8gk
Swaziland (2007)	\$1.23 M	\$1.94 M	http://tinyurl.com/qffrtsg
Bahrain (2010)	\$1.32 M	\$1.6 M	http://tinyurl.com/nfhwgz3
Trinidad and Tobago (2010-2013 3 year census)	\$1.34 M	\$83. M	http://tinyurl.com/oxovhsx
Guinea-Bissau (2007)	\$1.66 M	\$5. M	http://tinyurl.com/newmsw5
Gambia, The (2013)	\$1.81 M	\$6. M	http://tinyurl.com/q2n7fmt
Kosovo (2011)	\$1.81 M	\$15. M	http://tinyurl.com/pm9fgmf
Botswana (2011)	\$2. M	\$35.3 M	http://tinyurl.com/of2lxak
Latvia (2010)	\$2.03 M	\$5. M	http://tinyurl.com/ou5suy6
Macedonia FYR (2011)	\$2.11 M	\$19. M	http://tinyurl.com/praqley
Namibia (2011)	\$2.26 M	\$96. M	http://tinyurl.com/qcp9n6n
Jamaica (2011)	\$2.71 M	\$1400. M	http://tinyurl.com/pqt5co3

Armenia (2011)	\$2.97 M	\$6.4 M	http://tinyurl.com/o4a86sc
Albania (2011)	\$3.16 M	\$21. M	http://tinyurl.com/oh26hbf
Moldova (2004)	\$3.56 M	\$2.7 M	http://tinyurl.com/kkvcbtp
Panama (2010)	\$3.8 M	\$16.5 M	http://tinyurl.com/peazatz
Bosnia and Herzegovina (2012)	\$3.83 M	\$28. M	http://tinyurl.com/pme3f94
West Bank and Gaza (2008)	\$4.05 M	\$8.6 M	http://tinyurl.com/pwldut6
Liberia (2010)	\$4.19 M	\$5.6 M	http://tinyurl.com/pmf6usu
Croatia	\$4.27 M	\$31.5 M	http://tinyurl.com/o6vnq86
Costa Rica (2011)	\$4.81 M	\$3.6 M	http://tinyurl.com/otco3ck
Sierra Leone (2014)	\$11.96 M	\$10. M	http://tinyurl.com/nzumos
Paraguay (2002)	\$13.37 M	\$10. M	http://tinyurl.com/nvrlb56
			http://tinyurl.com/oxm8dz
Sebia (2011)	\$14.45 M	\$32. M	http://tinyurl.com/q99gaqs
Tajikistan (2010)	\$16.02 M	\$15. M	http://tinyurl.com/pp5rdp4
UAE (2010)	\$18.41 M	\$18. M	http://tinyurl.com/pn7v9n6
Azerbaijan (2009)	\$18.6 M	\$3.5 M	http://tinyurl.com/oxz5f7n
Benin (2013)	\$19.7 M	\$9.4 M	http://tinyurl.com/pxg76lh
Haiti (2006)	\$20.35 M	\$8. M	http://tinyurl.com/qyhj2ah
Bolivia (2012)	\$20.99 M	\$50. M	
South Sudan (2014)	\$21.68 M	\$99. M	http://tinyurl.com/pwjcx5v
Rwanda (2012)	\$22.92 M	\$21.3 M	http://tinyurl.com/njoduuh
Chad (2011)	\$24.9 M	\$30. M	http://tinyurl.com/pgtx9ve
Zimbabwe (2014)	\$27.45 M	\$16. M	http://tinyurl.com/ogkqugo
			http://tinyurl.com/o92mw4
Mali (2012)	\$29.71 M	\$3.15 M	http://tinyurl.com/kkvcbtp
Cambodia (2008)	\$29.73 M	\$8. M	http://tinyurl.com/py6gsgw
Guatemala (2013)	\$30.17 M	\$22. M	http://tinyurl.com/kkvcbtp
Malawi (1998)	\$31.81 M	\$10. M	http://tinyurl.com/oct2qhe
Kazachstan (2009)	\$33.59 M	\$7.6 M	
Chile (2012) <i>Later Annuled</i>	\$34.93 M	\$32. M	http://tinyurl.com/p5zbqx7
Romania (2014)	\$63.98 M	\$62. M	http://tinyurl.com/on98j72
Yemen (2014)	\$71.56 M	\$68. M	http://tinyurl.com/q2rjpeb
Ghana (2010)	\$76.1 M	\$50. M	http://tinyurl.com/ngolhg7
Malaysia (2010)	\$87.72 M	\$61. M	http://tinyurl.com/o4qguj5
Afghanistan (2008)	\$89.47 M	\$44. M	http://tinyurl.com/qfxqhkk
Venezuela (2011)	\$89.86 M	\$123. M	http://tinyurl.com/43cpy5y
			http://tinyurl.com/nq327v
Uganda (2014)	\$109.04 M	\$62. M	http://tinyurl.com/pqo8lh3
Algeria (2007)	\$115.45 M	\$32. M	http://tinyurl.com/oe88ys9
Kenya (2009)	\$129.53 M	\$75. M	http://tinyurl.com/o69seay
Tanzania (2011)	\$143.35 M	\$66.6 M	
Korea, Rep. (2010)	\$150.01 M	\$157. M	http://tinyurl.com/oh6b62q

South Africa (2011)	\$153.57 M	\$184. M	http://tinyurl.com/oo8q4dp
Burma (2014)	\$158.39 M	\$58.5 M	http://tinyurl.com/qasm6xx
Iran (2011)	\$229.27 M	\$70. M	http://tinyurl.com/nka94j7
Egypt (2006)	\$242.17 M	\$24. M	http://tinyurl.com/ox93oxx
Vietnam (2009)	\$266.33 M	\$33. M	http://tinyurl.com/o8wmuk
Mexico (2000)	\$362.54 M	\$250. M	http://tinyurl.com/o8443zv
Nigeria (2006)	\$506.5 M	\$843. M	http://tinyurl.com/pdskmc
Bangladesh (2011)	\$464.09 M	\$42. M	http://tinyurl.com/qjm2cqh
Brazil (2010)	\$595.97 M	\$909. M	http://tinyurl.com/nanf7om
India (2011)	\$3710.06 M	\$361. M	http://tinyurl.com/omeakfj
China	\$4052.09 M	\$1007. M	http://tinyurl.com/q82hnuz

Known DHS Surveys*

Country	Year	Cost (later multiplied by 5 to indicate five surveys)	Source
Tanzania	Average of '91,'94,'96,'99	\$0.8m	http://tinyurl.com/kkvcbtp
Peru	2000	\$1.20	http://tinyurl.com/kkvcbtp
Burkina Faso	2003	\$0.9m	http://tinyurl.com/kkvcbtp
Cambodia	2000	\$0.9m	http://tinyurl.com/kkvcbtp
Malawi	2002	\$0.9m	http://tinyurl.com/kkvcbtp
Moldova	2000	\$0.9m	http://tinyurl.com/kkvcbtp

This paper was written by Morten Jerven, Associate Professor at Simon Fraser University. The project brings together more than 50 top economists, NGOs, international agencies and businesses to identify the goals with the greatest benefit-to-cost ratio for the next set of UN development goals.

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