

LONG-RUN ECONOMIC GROWTH AND POLICY: A CASE ABOUT MALI

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Abstract

A short case about long-run economic growth issues in the African nation of Mali is presented. Issues discussed in the case include challenges related to Mali's education system, investment, and trade. Basic facts and statistics about Mali are provided. Analysis of public policy issues and the inherent challenge of extreme poverty are natural outgrowths of the case. The case serves as a foundation for in-class discussion or a take home assignment. The basic case objective is to add real-world context to what can often be a very technical presentation of growth issues. Though designed for a principles of macroeconomics course, the case would also be appropriate for a development course or an international economics course. In addition to the case itself, comments on preparation for teaching the case, conducting discussion related to the case, and possible assignments to go with the case are provided. Also, a brief motivation for using cases in principles of macroeconomics is provided.

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Introduction

Long-run economic growth, assumed improvement in living standards that accompany growth, and the challenges associated with achieving growth in impoverished countries have long interested economists. The famous quote from Robert Lucas illustrates that. "The consequences for human welfare involved in questions like these are simply staggering: once one starts to think about them, it is hard to think about anything else" (Lucas, 1988, p. 5). In a principle of macroeconomics course, the magnitude and complexity of these issues can easily be lost. A real-world case about growth challenges in the African nation of Mali is presented here.

While other countries may have equally been chosen for this purpose, Mali is surely a relevant example. Despite some progress in growth and living standards has been made (with average incomes over \$3 a day, Mali technically exceeds the common \$2 a day threshold for extreme poverty), Mali faces numerous challenges. The case presented is purposely kept brief in order not overwhelm students with rudimentary knowledge of economic principles while still providing enough context to gain a sense of the complex issues. In addition to the case itself, preparation, case discussion suggestions, possible assignments, and issues of assessing the case are discussed. While designed for a

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principles of macroeconomics course, the case would also be appropriate for a development course or international economics course, especially as an refresher or introduction to those topics. Finally, for interested readers, we also provide a brief rationale for using cases in principles of economics courses in Appendix A.

Before providing the text of the case itself, an understanding of how long-run economic growth is often presented in principles of macroeconomic is helpful. To aid in that regard, we discuss the model presented in *Brief Principles of Macroeconomics*, Fifth Edition, by Greg Mankiw, which is a representative example. Productivity (output per unit of labor) is a function of technology and various inputs. The function is assumed to exhibit constant returns to scale and diminishing returns in any one input. Inputs include capital (e.g., equipment, machines, buildings, and tools), natural resources (e.g., oil, ores, and waterways), and human capital (e.g., education and on the job skills). Each input is defined as per unit of labor. Thus inputs go into a “black box” production process, which is affected by technology, and goods and services are the resulting output. Income derives from the sale of those goods and services and so living standards depend on increasing production relative to the amount of labor (or more broadly, people) in a country. Saving and investment (domestic and foreign) can enter by adding to the capital stock.

Useful for organizing and categorizing issues of long-run economic growth, the model perhaps suffers from oversimplifying the complex challenges a country faces in designing policies to promote growth. Increasing living standards are a simple matter of increasing the inputs or inventing or acquiring better technology in the model. The model does allow for the impact of political instability, trade policy, or corruption, but in effect, they are assumed exogenous factors. For example, if a country is lacking in an input such as human capital, an appropriate policy response is simply to increase human capital through more spending on education. While a useful framework, because of the technical details, students often fail to make that connection or appreciate the difficulty that policymakers face in reality. The Mali case we present is designed to provide students an introductory sense of that complex reality.

A Case About Mali

As you step off the plane, you are not quite sure what you have gotten yourself into. One minute you were a junior professional associate at the World Bank headquarters in Washington D.C., the next minute you were being sent to Mali to provide technical advice to the local government. You've been asked to take a meeting with a government official to provide an overview of Mali's recent economic growth history and its future prospects based on current challenges.

As you enter the waiting car, you realize that you have just set foot in one of the poorest countries on Earth. In 2007, Mali ranked 178 of 182 countries on the human development index (World Bank, 2010). You recall the history of this landlocked African nation. Mali once was a colony of France. It gained independence in 1960, but a dictatorship reigned after that. A military coup in 1991 led to the establishment of a democratic style government and recently peaceful elections were held. Despite this improvement, the country still lacks in many ways. Located in northwestern Africa, the country is mostly desert (the Saharan), and surrounded by relatively unstable countries like Algeria and Cote d'Ivoire (Central Intelligence Agency, 2010). The Malian military has been battling a rebel group and terrorist organizations (World Bank, 2010).

The echoes of French colonization are seen clearly in Mali's education system. Most courses and textbooks use the French language, which is the official language of the country. Most of the population speaks Bambara or one of many other African languages. The country lacks qualified teachers, classrooms, and materials. Also, the agrarian based economy creates incentives for children to work rather than attend school. Only 60% of eligible students enroll in school. Of those, roughly a third will graduate. Corruption is rampant as well. Teachers and administrators can be bribed for everything from grades to scholarships or even diplomas themselves. (Bender et al, 2007) Transparency International ranks Mali as 111 of 180 countries on its corruption perceptions index in 2009 (Transparency International, 2010). The World Bank has been coordinating donors as well as providing resources itself for at least the past 15 years. (Bender et al, 2007)

As you are shepherded through the capital of Bamako to your meeting, you turn your attention to the papers you have brought along. The briefing sheet states that 80% of the labor force relies on fishing and farming. The population growth rate is relatively high compared to sub-Saharan African countries overall. The rate of HIV infection is low compared to other sub-Saharan African countries, but still high relative to an industrial country like the U.S. (Central Intelligence Agency, 2010)

The economy of the country relies heavily on trade, roughly three times as much as the U.S. does but nowhere near as much as some Southeast Asian countries. Mali's primary exports are cotton and gold while its primary imports are food, energy, and capital goods (Central Intelligence Agency, 2010). Mali depends on foreign aid from the World Bank and other sources (Central Intelligence Agency, 2010). The country's real investment as a share of real GDP was about 1/4 of what it was in the U.S. in 2004 (Heston, Summers, and Aten, 2009). According to the World Bank, the country ranks 156 of 183 countries on the 2010 ease of doing business index (World Bank, 2010).

You enter your meeting with a lot on your mind. The government official greets you warmly and asks, "What is the biggest challenge my country faces for economic growth?" Momentarily pausing, you begin to speak...

<i>Mali Socioeconomic Data: Annual Averages by Decade</i>					
Variable	Decade				
	1960s	1970s	1980s	1990s	2000s
Population (thousands)	4,940	6,127	7,315	8,903	10,982
Labor Force (thousands)	--	--	2,311	2,682	3,301
GDP per Capita (2005 USD)	647.26	662.45	811.07	983.32	1,209.30
Consumption per Capita (2005 USD)	574.72	714.77	807.93	866.48	960.73
Investment per Capita (2005 USD)	36.01	57.49	69.92	85.29	92.84
Government Spending per Capita (2005 USD)	109.48	67.55	149.05	226.82	281.02
Openness (%)	36.78	58.04	54.22	53.37	59.62
Gross Capital Formation (% of GDP)	17.00	15.50	17.20	22.60	23.63
Foreign Direct Investment, Net Inflows (thousands USD)	--	1,325	2,273	23,679	132,025
External Total Debt Stocks (thousands USD)	--	377,149	1,405,397	2,908,028	2,687,895
Net Official Development Assistance and Official Aid Received (thousands USD)	14,741	90,779	320,610	431,732	650,708
Inflation Rate (%)	12.50	9.00	6.40	6.10	5.11
Life Expectancy at Birth (years)	36.71	38.56	41.41	44.09	46.99
Under 5 Mortality Rate (deaths per 1000 births)	417.90	354.25	285.40	241.55	201.90
Adult Literacy Rate (%)	--	9.43	--	19.04	25.09

Data are annual averages by decade constructed from the Penn World Tables, Version 6.3 available at <http://pwt.econ.upenn.edu> and from the World Bank available at www.worldbank.org. For some variables (for example under 5 mortality and literacy rates), early decade averages are based only on limited years of available data. For the 2000s, years are for 2000-2008.

For further reference, the CIA World Factbook (www.cia.gov) reports the following recent information for Mali. For 2010, the adult literacy rate is 46.4%, life expectancy at birth is 52.17 years, the population growth rate is 2.6%, population level is 13,796,354, and the median age of the population is 16.2 years. Real GDP growth was 4.0% in 2009, inflation was 2.7% in 2007, and the unemployment rate was 30% in 2004. For 2009, GDP per capita was \$1,200 annually on a purchasing power parity basis.

Teaching Note

Conway (n.d.) provides a useful framework for preparing to teach a case, especially as it relates to case discussion, which he calls the “GREAT” method.¹ The acronym stands for goals for the session, reverse engineering, entry scenario, advance the discussion, and trace out the reasoning. As we proceed with discussing suggestions for teaching the Mali case, we implicitly follow the GREAT method. We discuss three possibilities (a discussion, a role-playing scenario, and a take-home assignment) for incorporating the Mali case into a principles classroom. The assignment would work in a development or international economics course especially as a refresher for long-run economic growth. We also discuss summative (i.e. graded) assessment of the Mali case as well.

Learning Outcomes

For the Mali case we identify three goals or learning outcomes that are appropriate for a principles of macroeconomics course.

1. Demonstrate a link between real-world data and a long-run economic growth model (i.e. production function).
2. Demonstrate recognition of challenges and complexity for long-run economic growth in a developing country.
3. Demonstrate a link between economic policy and long-run economic growth with a long-run economic growth model (i.e. production function).

In a nutshell, the proposed learning outcomes involve students being able to show an understanding of the connection between the theoretical growth model (described in the introduction) and real-world growth issues. Further students should be able to appreciate the inherent challenges for a developing country in implementing effective growth policies in those circumstances.

To achieve the first learning outcome, a student needs to be able to take some aspect of the information provided and link it to a production function. As one example, from the data table, we can see that real GDP per capita, while low, has been rising over the decades in Mali and that real investment per capita has risen as well. If a student is able to make the link that the additions to the capital stock through investment are one factor leading to an increase in productivity and average income, they will have achieved the first learning outcome.

For the second learning outcome, a sense of the conflicting information would be sufficient. As one example, from the data table, there is some evidence of increased literacy rates over the decades, yet they remain relatively low in Mali at 46.4% in 2010. So one might describe human capital in Mali as improved over what it once was. Yet, as presented in the case text, there are clear problems in the Malian education system today. That raises the question of how much actual improvement in human capital has taken place (or perhaps how awful was it if current circumstance represents improvement)? There is no way to definitively answer the question with information from the case. If a student recognizes that ambiguity, they will have achieved the second learning outcome.

¹ Examples can be found at his website. The direct link is <http://www.unc.edu/home/pconway/aea2000/caseexp.htm>.

For the third learning outcome, a student needs to be able to suggest an economic policy that would potentially address one of the growth challenges Mali faces and then be able to explain how that policy affects productivity based on a production function. As an example, if a student looks to address the problems in the education system, they must be able to explain how the policy improves human capital and then by extension improves productivity and living standards.

Preparing Students for the Case

Prior to teaching the case, students are likely to require some preparation. While the case could be used as an introduction to long-run economic growth, it may be best used after an introductory lecture on economic growth. In particular students should be exposed to the production function (discussed in the introduction) before working their way through the particulars of Mali and associated statistics.

Some case details are likely to be unfamiliar to principles students. They may not know what the World Bank does. Providing a basic overview of the role of the World Bank, in particular, the World Bank function of providing technical assistance to countries would be helpful. Further along those lines, students will be unfamiliar with the junior professional associates program for the World Bank. That program allows recent college graduates to work for the World Bank for a two-year period. Junior professional associates then take that experience back into the private sector or graduate school, a non-governmental organization, etc. We used this in the case because it places the student in a position that is relatively closer to their age range than the typical World Bank job, which tends to require a graduate degree. Requiring students to visit the World Bank's website as an un-graded assignment and read about the junior professional associates program and the basic mission of the World Bank would be useful.

Students are also unlikely to be familiar with each statistic provided in the case. It is at the discretion of the instructor whether a preparatory assignment requiring students to look up the definitions of these statistics is appropriate or whether the instructor would prefer to simply provide definitions to the students. Openness, which is exports plus imports as a percentage of GDP, and gross capital formation, which is additions to fixed assets and net inventory changes, are the two statistics students are likely the most unfamiliar with. Students may also be unfamiliar with the components of the corruption perceptions index or the ease of doing business index, but they will readily understand the general concept of those measures, which is sufficient for the case.

Finally, one of the appealing features of this case is that the information provided is not sufficient for fully understanding Mali's situation. That introduces real world ambiguity, which is often a fact of life in decision-making and wrestling with complex issues. One example of that is the data presented may not be in a form that is desirable or may have holes or gaps in it. For example, real GDP per capita for Mali is provided here. Clearly it is correlated with productivity, but it is not technically output per unit of labor.² Similarly, some of the variables are available only in nominal rather than real terms. Also, the data can be combined in various ways. For example, national savings per capita

² The Penn World Tables do contain more direct measures of productivity but including real GDP per capita maintains consistency with the other the other national accounts data provided (consumption, investment, government spending). A more direct measure could be recovered with the labor force data provided.

can be constructed using the identity national savings equals income minus consumption and government spending. While perhaps beyond the scope of a principles of macroeconomics course, forcing students to contemplate the details of the data would be one way to leverage the case for a development or international economics course.

Teaching the Case

Three options for teaching the case are presented: a traditional in-class discussion, an in-class role-playing scenario, and a take-home assignment. For the in-class discussion, one 50-minute class period is sufficient, though actual time used can vary substantially depending on the level and quality of student participation. For the role-playing scenario, one 50-minute class period plus either a small portion of another class period or an outside class assignment is sufficient. The take-home assignment need not take up any class time as it is equivalent to a homework assignment.

For the in-class discussion, a maximum class size of 20-25 is best. Students are provided the text of the case at least one class period in advance. On the day of the discussion, break students into small groups of no more than five students (three or four is optimal). The basic format is then to ask a question, give the groups time to formulate a response, and then solicit responses from all or a subset of the groups depending on the time constraint, and then proceed to the next question. The following is a sequence of questions tied to the learning outcomes described previously and provides a natural way to make a formative (i.e. not graded) assessment of those outcomes.

1. Over recent decades, has Mali experienced long-run economic growth? Provide one reason why they have or have not. Use the production function to explain your reasoning.
2. What is Mali's biggest challenge for future economic growth? Recommend a way to overcome that challenge.
3. Are there any stumbling blocks or problems with your recommendation? If so, list one.
4. Can you think of a way to get around that problem? If so, suggest it, if not, state why not.
5. If Mali follows your advice, will it be better off? If so, explain how and why, if not, explain why not. Use the production function as part of your explanation.

Providing students a handout on the day of the discussion that includes these questions and enough space that they can record their answers is helpful. Keeping sequential note of the responses on the board (dry-erase, chalk, etc.) is helpful too, as it will allow the instructor to correct any faults in student logic. Students can then make those corrections themselves on their handout. Notice that in answering these five questions, students will be proceeding through the logic necessary for the learning outcomes. Discussion question #1 relates to learning outcome #1, discussion questions #2-4 relate to learning outcome #2, and discussion question #5 relates to learning outcome #3. With a 50-minute class period, allocate roughly 10-minutes to answering each question. One way to speed up the discussion is to use only one group's answer for discussion question #2 and answering subsequent questions based on that one answer. Finally, consider collecting all of the

answers at the end for a small participation credit if you feel it is necessary to increase student engagement with the case.

In principles of macroeconomics, expect students to gravitate more to the qualitative information rather than the quantitative information (i.e. the text rather than the data table). For example, students may tend to look at Mali's recent growth history based on problems of political instability (colonization, a coup, a recent democracy, unstable neighbors) rather than looking straight for a productivity proxy like real GDP per capita. Similarly, education and health issues may be common challenges mentioned by students for Mali. Of the statistics, life expectancy, mortality, and adult literacy may be the most mentioned in support of student arguments. Students may also fail to combine information as well. For example, Mali is heavily reliant on trade, yet as a landlocked country, distribution of goods and services is a challenge. During discussion discussion, the instructor can serve to guide students back to the production function. Even simply drawing a well-labeled production function on the board can help in that regard. Especially as health and education may be the common answers, reminding students of the definition of human capital is useful.

An alternative to a standard discussion of the case is to have students create and then act out a role-playing scenario. One advantage of this is that it combines elements of a take-home assignment with in-class participation, and can form the foundation for a more comprehensive project if desired. One disadvantage is that it can be a bit more time consuming than a standard discussion. Towards the end of a class period, place the students into small groups and provide them with the case. Outside of class, require each group to prepare a short dialogue or "mini-play" with two roles: the government official and the World Bank junior professional associate. Encourage students to access more information about Mali online if they want as long as they provide references. Each group selects two members to act out the dialogue for the class. The group also turns in the dialogue as well for homework credit. For this option a simple set of instructions with prompts is helpful. For example, there must be at one to two pages of dialogue. Students should think about what the government official would ask the World Bank associate. They should think about what the associate would say, the advice the associate might give, and how the government official might respond. Students should be sure to recall the production function discussed in class and how it might help for explanations of Mali's circumstances.

Finally if an instructor prefers to not use class time at all, this Mali case would work well as a take-home project or homework assignment. A simple example of that would be to assign the discussion questions mentioned above to students and require short responses for each. A more involved assignment would be to require each student to write a one to two page "friend of Mali" brief in which they must briefly summarize Mali's economic circumstances, discuss one challenge for Mali's future living standard improvements, and make one suggestion that would help improve Mali's circumstance and explain how it would do so.

Assessment

The Mali case naturally serves as a formative assessment of student understanding of long-run economic growth issues and a production function. During the back and forth of a discussion, the acting out of a mini-play, or the submission of a written homework

assignment about the case, an instructor can observe which students are making the complex connections needed to understand Mali's long-run growth prospects. To the extent there is a participation or homework score associated directly with the case, the Mali case is also a valid summative assessment. Still, it can be helpful to connect additional summative assessments to the Mali case at a later date in order to gauge student retention of the material and maintenance of the learning outcomes. Two suggestions are offered.

First, if the case is discussed in class or the mini-play is used, we recommend the instructor take notes of the key points that students made about Mali and then summarize those points for the students either at the end of that class period or the beginning of the subsequent class. For example, suppose the main avenue of the discussion is that Mali's education system needs overhauled. A multiple-choice question on a future exam might be "In response to the lack of human capital in Mali, the class suggested a policy response of ..." Included as a choice should be "overhaul of the education" system. In designing these types of questions, it is vital, though, to use the precise language that was used in class that day.

Perhaps more involved than an exam is to create an additional small project based on the Mali case. For example, have students research a different African nation (Rwanda for example) and write brief paper comparing and contrasting Rwanda and Mali's recent growth experience and growth challenges. This has the added benefit of familiarizing students with at least some of the common data sources directly used in the Mali case. A key disadvantage is that students can become lost in this, especially principles students who are generally unfamiliar with economic reasoning let alone economic data sources and their issues. This assessment tool may be better suited for a development or international economics course. In fact, one key factor that the case does not address is Mali's exchange rate. Development or international economics students could be asked to investigate Mali's exchange rate online and explain how it impacts, if at all, Mali's long-run growth prospects.

Conclusion

Despite signs of progress, Mali clearly faces many current and future challenges to long-run economic growth and improving living standards. The short case presented here provides real world facts about Mali that students can wrestle with and try to reconcile with the conceptual production model presented in class. Hopefully the case serves as a starting point for students to contemplate and appreciate the challenges of poverty and growth as economists do.

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Appendix: Cases and Principle of Economics

One of the biggest challenges in a course, especially an introductory economics course, is balancing the level of abstraction with real world practicality. In an introductory economics course this is often due to the simplifying assumptions of the models presented. These assumptions may be needed to clearly articulate the main ideas but they often do so at the expense of the ambiguity and messiness that exists in real world situations (Carlson and Schodt, 1995). As a result students may not make a connection between technical details and practical relevance. Salemi (2002) provides a rationale for incorporating active learning in the classroom. One type of active learning is a case. Carlson and Schodt (1995) and Carlson (1999) provide a rationale for using cases to teach economics and statistics, respectively. Some evidence of the efficacy of cases is also in Carlson and Schodt (1995).

As described in Boehrer (1996) a case provides a narrative grounded in either real world detail or if fictional, enough realism to be believable. The key to a case is that the student is placed in the role of active participant such as the role of a decision-maker or advisor. This is the main difference between a case and a case study; a case study describes an already made decision and students are left to analyze that decision (Boehrer, 1996). A case provides information but may not necessarily provide all the information needed or desired. Or a case may provide contrasting or contradictory information. Thus an additional key to a case is that there is no clear right answer to the decision that the student is faced with. In that regard, a case differs from a context-rich problem (such as a detailed homework question) where there is a specific answer and the information needed to obtain it is provided.

As principles of macroeconomics is often a general education requirement in colleges and universities, providing connections to students of different backgrounds and interests is important. A varied approach is one way to appeal to heterogeneous learning styles (Lage, Platt, and Treglia, 2000). The case method can serve as one of those approaches. The appeal of the case is that it helps connect course material to a real world situation. It does so while requiring students to apply more analytical reasoning than is often found in many other types of questions or assignments. One drawback is that a case can be more time consuming than a lecture. Thus using a case in a principles course may result in fewer topics covered. Though a valid concern, the expected benefit from case analysis in principles of economics is higher-order student learning (such as in the Bloom et al, 1956, sense of the term).