Do Governance Structures Matter in Research Productivity?

[An International Comparison of University Governance Structures and National Contexts]

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Summary

Over the past couple decades university governance has become a popular topic in the debate of university productivity due to the rise of New Public Management (NPM) and international ranking systems like the Shanghai Jiao Tong University (SJTU) rankings. These factors have worked together to encourage university leadership and national policymakers to reform university governance to become more like a free market and therefore more research productive. These reforms follow a global public governance NPM reform agenda that was a reaction to the rise of the welfare state. In relation to university governance NPM reforms align especially well in the Anglo-Saxon countries that have been historically more free market oriented. The question that arises from these developments is wither these changes influence production? The STJU Rankings show that universities coming from a variety of countries with market-oriented systems and not have similar rankings. What then is the source of university productivity?

Three universities were chosen using a public governance ideology developed by Olsen & Maassen (2007) that isolates three dominate university governance ideologies. of economy, open society, and national agenda driven ideologies three universities are linked based on governance and respective national contexts. This thesis uses these ideology types to analyze the similarities and differences between the university governance structures to see if they do align to these different ideologies. To complement this research, national context indicators are also analyzed to see if they can account for the similar research production.

The findings of this study reveal that indeed the governance structures are different and therefore cannot fully explain the similar research production of the chosen universities. The national context indicators do reveal that research production can be tied to several other factors of the university and that the NPM reforms have mixed results in productivity between the universities.

Foreword

Looking back at the last couple years and realizing what I have learned and accomplished, there are many people involved along the way. Especially this paper would not have been possible without the support from my advisor, program administrators, family, and friends.

I must thank my supervisor Professor Peter Maassen whose expertise was incredibly helpful in the formation and structuring of this paper. Kristi Barcus and Samia Iram were very helpful in helping with the submission process. My family has been the basis of my support both financially and physically, both in the US and Norway, I am extremely lucky to have a family that is supportive in my academic pursuits even when they take me halfway around the world. Lastly, my friends and classmates have been there in both the good and bad times, and the time spent listening to ideas of my thesis or just listening to me talk about the stress of everything was just what I needed.

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1 Chapter One: Introduction to the Study

1.1 Introduction

University governance is a topic that has come to light in conjunction with changes in public governance reforms termed New Public Management (NPM). The intent of these reforms was to increase efficiency through making higher education systems more like a free market. Reforms created competition in research funding or by encouraging universities to make their own revenue through patent production or increasing tuition fees. NPM policies were implemented in many countries which reflects Meyer et al.'s (1997) work on convergence of policymaking in a globalized world. At the same time, university governance differs just as public governance changes from nation to nation as shown in Olsen's (2007) work on visions of public governance and Clark's (1983) work on international differences found in higher education systems. In this way, there was a convergence in policy reform but a divergence in their implementation due to national differences in higher education. In addition, developing countries like China also wanted to develop their universities to compete internationally. The Shanghai Rankings were created in 2003 by Shanghai Jiao Tong University (SJTU) to rank the most productive research universities. The rankings revealed that the US and U.K. universities were taking the lion share of the top universities and further encouraged NPM reforms as they closely align with US and UK governance models. At the same time, there are several examples of universities with less aligned NPM governance structures that are equally productive.

In this case the question arises, is the governance structure the determining factor in university productivity or are there other factors that may explain their productivity? A further development on Olsen's variations of public governance structures found three dominant ideologies that are found in different national contexts productivity (Olsen & Maassen, 2007). The economy driven ideology views the higher education system as a market where competition between universities and inside universities increases fiscal efficiency and productivity (Olsen & Maassen, 2007). The open society driven ideology emphasizes democracy in the university governance where the university is viewed as a strong public foundation to benefit society productivity (Olsen & Maassen, 2007). The national agenda-

driven ideology sees the university as an instrument of the state to carry out a its political agenda and university governance is monitored to ensure goals are met (Maassen & Olsen, 2007). The economy-driven ideology can be linked to Anglo-Saxon countries, the open society ideology to Continental Europe, and the national political agenda ideology to Northeast Asia.

This study will examine how the different national contexts affect university productivity using three universities that were equally productive according to the SJTU rankings and came from countries linked to each public governance ideology. The University of California San Francisco (UCSF) was chosen for the economy-driven ideology, the Swiss Federal Institute of Technology Zurich (ETH Zurich) represents the open society ideology, and the University of Tokyo (UT) was chosen for the national agenda ideology. These universities governance structures will be linked to their respective ideology and compared to see the similarities and differences and the degree to which they follow an NPM reform agenda. Indicators will be used to compare their national contexts and see if these can explain their equal levels of production.

1.2 Research Objectives

This study's objectives stem from the researcher's curiosity of governance structures and national contexts of universities and their impacts on the productivity of the university. From a public governance perspective, universities are a unique case due to their bottom-heavy and decoupled nature in which the academic governance is unique to each disciplinary culture and can disagree with the administrative governance (Clark, 1983). The first objective of this study is to see how the university governance structures align with the three public governance ideologies previously mentioned. The second objective is to see the differences in governance structures despite some convergence due to the adoption of NPM reforms. The third objective is to examine how national contexts further align with governance structure differences and if they affect university productivity.

1.3 Research Problem

Due to the rise of NPM reforms and the dominance of Anglo-Saxon universities in international rankings, NPM-aligned models of governance are assumed to create a more

productive university. This movement emphasizes fiscal self-reliance, competition for enrollment, and research grants rather than honoring the historical mandate of a university to create and disseminate knowledge. Moreover, these reforms have changed university personnel composition by increasing administrators and decreasing tenure-track staff with part-time staff positions. Therefore, as research universities and national higher education systems continue to operate in a growing competitive international market, there is pressure to imitate the leaders who follow an NPM aligned model of governance which may not be the main factor in research productivity.

1.4 Research Questions

What are the main overall features of university governance structures?

What are the main differences and similarities in university governance structures in different national contexts?

How do the national contexts affect the performance of the university?

1.5 Significance of the Study

As global competition has increased through globalization and the rise of international rankings like the SJTU, universities are increasingly pressured to develop more professional management practices, especially when it comes to their academic process, as well as administrative areas such as staff and funding. But as the top 10 universities in the world are in a league of their own mostly due to large endowments, the question can be raised to what extent a university's governance structure contributes to its productivity. Against this backdrop, this study is significant to contribute to a better understanding of the factors that make a university productive in different national contexts.

This study can be used by university leadership and education policymakers to reevaluate the governance structures of their universities and the national policies that guide them. It may be useful for the nations that are represented in this study and hopefully will inspire further research in other national contexts.

1.6 Structure of the Study

The study consists of six chapters with subheadings in each. Chapter one contains the introduction research objectives, research problem and questions, significance of the study, limitations of the study, and the structure of the study. Chapter two consists of the background and context of the study where the three governance ideologies are briefly introduced and connected to each respective university. Next a historical profile of each university is presented along with its national higher education context.

The literature review follows in chapter three where the rise of NPM and the SJTU rankings, composition of the university as a unique institution, models of university governance, and the analytical framework is discussed. Chapter four presents the research design, methodology, process of data collection, validity, reliability, and ethical considerations.

Chapter five presents the data and analysis in a two-part process. Part one examines the main differences among the three universities' governance structures using university governance indicators. Part two discusses what difference the national contexts make when it comes to university performance. Chapter six concludes the study with discussing the findings and presenting recommendations. Implications of the study are also discussed in addition to suggestions for further research.

2 Chapter Two: Background and Context of the Study

2.1 Introduction

In order to understand the similarities and differences between the chosen universities and how they relate to each other in governance structures and national context, it will be helpful to understand the three governance ideologies and how they connect each university's profile and its national higher education context. In this chapter, the empirical setting will be described to help the reader understand the variety of factors that are involved in each case and allow for a clear analysis of the data gathered.

2.2 University Governance Ideologies

Public governance is a multifaceted and continues to change depending on socio-cultural norms that are translated to governance models. Depending on each national context higher education governance changes to fit these contexts. In the case of this study, the focus will be on the economy, open society, and national agenda driven ideologies as they represent the three dominating public governance models found in various higher education systems today.

The economy driven ideology is linked to Anglo-Saxon countries where free market ideals and low government intervention are celebrated (Olsen & Maassen, 2007). Due in part to low base funding from the state, university governance reflects corporate business culture where strong executive leadership sees fiscal responsibility as the main prerogative (Olsen & Maassen, 2007). Academic entrepreneurial activities are common as well as industry partnerships and high tuition fees. These revenue generating activities replace state base funding but also require additional administration.

The open society driven ideology is linked to continental European countries where the ideals of equality through democratic institutions and moderate to high government intervention is seen as beneficial to society (Olsen & Maassen, 2007). The state is the main funding source for the university through either entire institutional funding or performance base funding through inputs such as enrollment or outputs in graduation rates and research publications.

The university is seen as a necessary part of society and is therefore becomes a reflection of societies democratic governance (Olsen & Maassen, 2007). Each interest group that is a part of the university is represented in the governance structure, including external members.

The national agenda driven ideology is linked Northeastern Asian countries where the university is seen as another aspect of national economic development (Olsen & Maassen, 2007). State funding is moderate to high depending on the institution and is used to maintain political control over university objectives. University governance is organized in a top down structure where objectives flow through government ministries to the university and then audited base on mandated plans and goals (Olsen & Maassen, 2007). Universities engage in industry partnerships in connection with economic development goals.

2.3 University Profiles and National Contexts

This study uses the three universities chosen to reflect the dominant public governance ideologies found internationally in universities. Each university profile includes historical and current institutional data that is promoted by the each university. There are evident differences in each institutional profile and national higher education context that also connect to the university governance ideologies. These differences are used in addition to university governance structures to connect to the three university governance ideologies.

2.3.1 The University of California, San Francisco (UCSF) Representative of the Economy Driven Ideology

USCF was founded in 1864 and is a public health sciences university (UCSF, 2019). It is the leading health sciences university in the US and has four professional schools of dentistry, medicine, nursing, and pharmacy (The Regents of the University of California, 2019). Inside of these schools it has 19 PhD programs and 11 master's programs (The Regents of the University of California, 2019). In addition to its academic programs, it has three medical centers, two children's hospitals, and several primary care/ specialty clinics (The Regents of the University of California, 2019). Lastly, it generates around 43,000 jobs and has an economic impact of an estimated $8.9 billion dollars (The Regents of the University of California, 2019). It is a part of the greater University of California system which is made up of ten campuses across the state of California (The Regents of the University of California,

2015). This profile shows how UCSF is focused on the economy through its professional programs and promoting its monetary impacts and job creation.

National Higher Education Context

The US higher education system is known for its diversity of public and private institutions that are organized in a decentralized manner (International Affairs Office, 2008). UCSF is one of the just under 4,000 degree granting in the US system that vary in size and rankings (International Affairs Office, 2008). The constitution dictates responsibility of education to the state government in addition to the individual higher education institutions (International Affairs Office, 2008). HEI's are licensed as either for profit or nonprofit corporations that are governed by boards of trustees that are members of the community or industry (International Affairs Office, 2008). The board members are either elected by the legislature or appointed by the governor in public institutions or elected by the board itself in private institutions (International Affairs Office, 2008). Even though public institutions are separate from the state government they do receive some annual funds and depending on their charter might operate on state owned land (International Affairs Office, 2008). There may be other regulations from the state depending on the HEI's charter, but they are autonomous and self-governing in academic related governance (International Affairs Office, 2008). In general, private institutions do not receive state funding but some do if they provide public service (International Affairs Office, 2008). These national higher education context facts show how the US is free market oriented with little intervention in the education system.

UCSF's Governance Structure

The governance structure of UCSF is aligned with the economy driven ideology as its governance structure reflects a corporate governance structure. As seen in Figure 1 the structure follows an executive vertical structure where administrative power is strong through the double amount of vice chancellors compared to deans. Moreover, it is a singular system where all decision-making runs through the Chancellor instead of having multiple branches of leadership. This is further shown through the UC system as above the

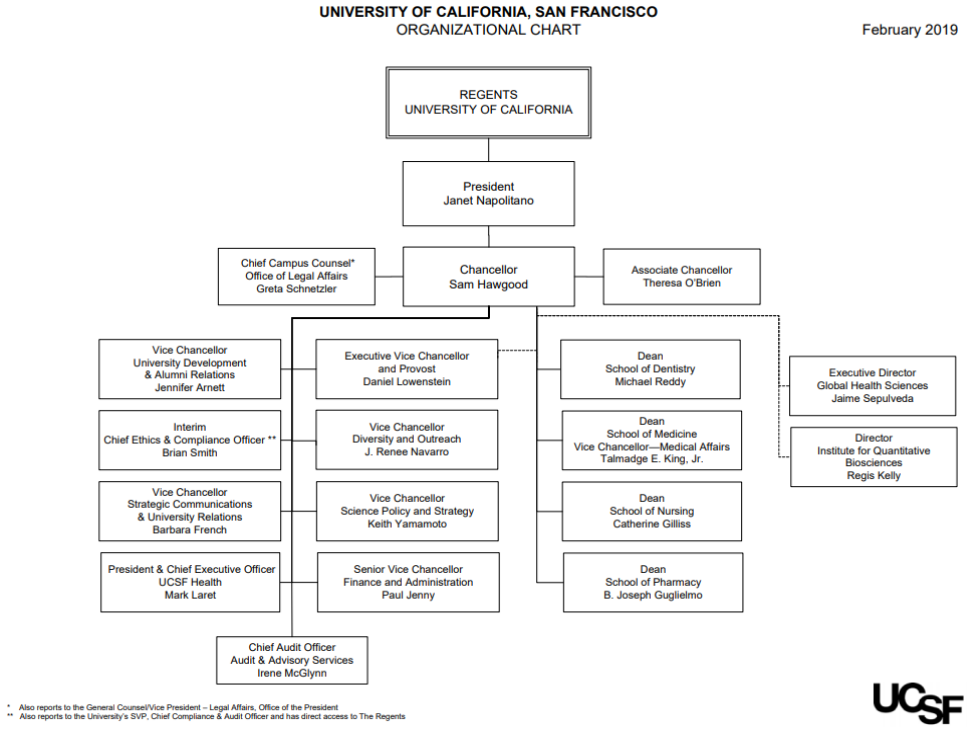

Figure 1 UCSF Organizational Chart Source: Regents of the University of California

chancellor is under the president who is under and appointed by the Board of Regents of the UC system. This board is made up of internal and external members (Regents of the University of California, 2019e). Deans, faculty, staff, and students are involved in leadership committees to advise the chancellor (Regents of the University of California, 2019c). The Chancellor's Cabinet and executive team are also administratively strong, where the cabinet reflects the organizational chart and the executive team only contains the vice chancellors. Moreover, each of these committees are advisory with the chancellor having the power to delegate decision making (Regents of the University of California, 2019b). Lastly, there is an academic senate at UCSF which is a division of the greater UC system (Regents of the University of California, 2019a). It has powers over most matters of curriculum and admission regulations and processes (Regents of the University of California, 2019a). The senate is governed by the president so once again the balance of power is very limited.

2.3.2 The Swiss Federal Institute of Technology Zurich (ETH Zurich) Representative of the Open Society Driven Ideology

Institutional Profile

ETH Zurich was founded in 1855 and is a public institute of science and technology. It is one of the two Swiss national universities of science and technology from the 19 higher education institutions (Fumasoli, 2008). The institute has five main study programs of architecture and civil engineering, engineering sciences, natural sciences and mathematics, system-oriented natural sciences, and management and social sciences (Eidgenössische Technische Hochschule Zürich, 2019a). It has a total of 48 master's degree programs that are separated into consecutive (follows a bachelor's degree specific program) and specialized which is interdisciplinary (Eidgenössische Technische Hochschule Zürich, 2019a). ETH Zurich's main focus areas are in Medicine, Data, Sustainability, Manufacturing technologies, and critical thinking (Eidgenössische Technische Hochschule Zürich, 2019b). They guide the university's research and teaching agenda to work interdisciplinarity and with industry partnerships (Eidgenössische Technische Hochschule Zürich, 2019c). It creates 109 patent applications and 205 invention reports each year and has created 407 spin-offs since 1996 (Eidgenössische Technische Hochschule Zürich, 2019c). This profile reflects the open society ideology in wide array of degree programs that that have the choice to be interdisciplinary and also includes industry partnerships and its production patent applications and inventions.

National Higher Education Context

Of the 19 Swiss HEIs there are two federal science and technology universities, 10 cantonal, and seven public applied sciences institutions and two privates (Fumasoli, 2008). The Swiss system is known for being fragmented with no common institutional framework including supervision of funding systems (Fumasoli, 2008). The complexity found in the system is due to the federalist nature of the country where the individual cantons (states) have the right to create a university that is funded through the confederation (Fumasoli, 2008). The two science and technology institutes are also funded by the confederation and the confederation does dictate rules for professional education (Fumasoli, 2008). The confederation has undergone changes since the 1990's and has followed NPM's set of reforms (Fumasoli, 2008). HEI's have gained institutional autonomy but the state steers the system through performance-based funding mechanism (Fumasoli, 2008). The national higher education context does reflect to

moderate extent the open society model through complexity found in the federalist governance structure that has a combination of local universities mixed with confederation universities that reflect the diversity of the languages and cultures in Switzerland.

ETH Zurich's Governance Structure

ETH Zurich reflects the university as a representative democracy through a collective governance structure. Figure 2 shows how the governance structure is more democratic through the horizontal structure with the vice presidents and rector side by side. Collective governance is also evident in the shared governance of the academic disciplines by the rector and vice president. Like the UC system, ETH Zurich is a part of the ETH system which is governed by a board appointed by the state education department and contains internal and external university members (ETH-Rat, 2019). This aspect of the system is not completely democratic as leadership positions are appointed and nominations are conducted through a selection committee made up of board members (ETH-Rat, 2019). The executive board consists of the rector and vice presidents and is chaired by the president (Eidgenössische Technische Hochschule Zürich, 2019c). This board is advised by nine university commission groups, three specialized groups, and the university assembly (Eidgenössische Technische Hochschule Zürich, 2019c). The commission and specialized groups are made of up of faculty, staff, and students and range in size (Eidgenössische

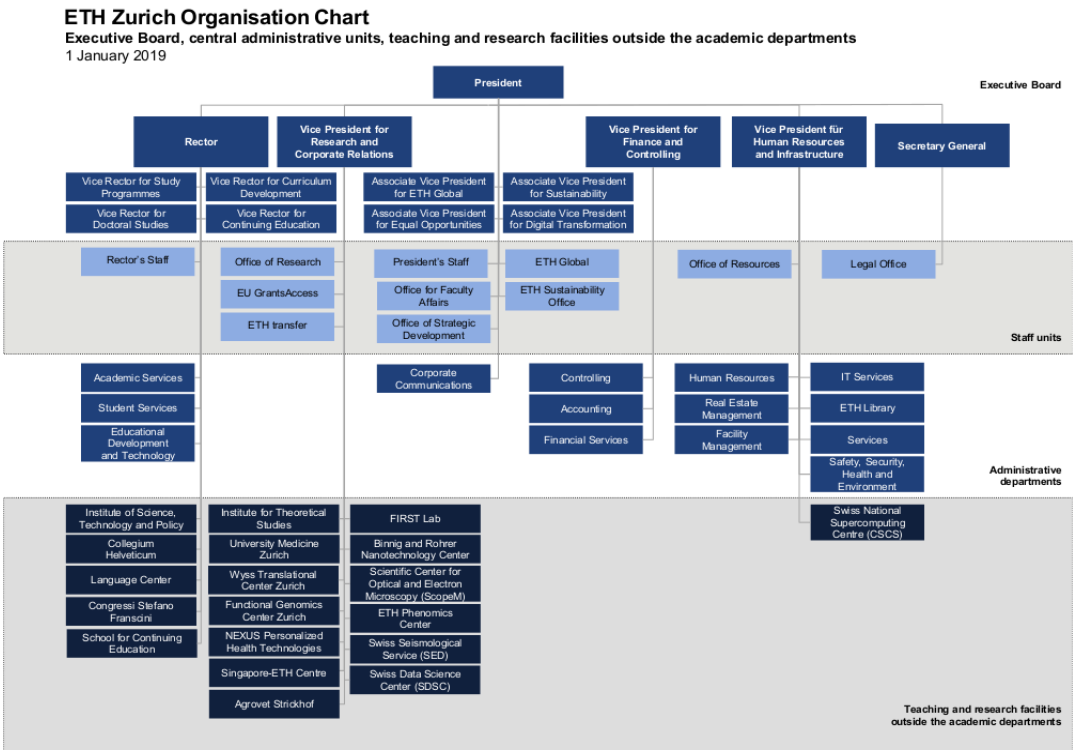

Figure 2 ETH Zurich Organizational Chart Source: ETH Zurich

Technische Hochschule Zürich, 2019c). The university assembly consists of four university groups that represent the lecturers, scientific staff, administrative staff, and students (Eidgenössische Technische Hochschule Zürich, 2019c). The state education ETH bylaws grant participation in all legislative laws made by the ETH Board, on budget and planning of the ETH and can also be granted further powers by the ETH Board (Eidgenössische Technische Hochschule Zürich, 2019h).

2.3.3 The University of Tokyo (UT) Representative of the National Agenda Driven Ideology

Institutional Profile

UT was founded in 1877 and is a public university in Japan that is the oldest and largest of the national universities (The University of Tokyo, 2018a). It has 10 faculties, 15 graduate schools, 11 affiliated institutes, and 13 university-wide centers (The University of Tokyo, 2018b). Each faculty is organized in a junior (1st & 2nd undergraduate year) and senior division (3rd & 4th undergraduate year) while each graduate school has masters and PhD programs (The University of Tokyo, 2018b). It has three main campuses with 41 university organizations and has facilitated the creation of 280 start-up companies (The University of Tokyo, 2018a). UT has 420,904 alumni of which 15 were prime ministers and five astronauts (The University of Tokyo, 2018a). This institutional profile reflects the national agenda driven ideology through it being a national university and that it promotes it alumni through number of prime ministers and astronauts.

National Higher Education Context

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) governs the higher education system of Japan (Higher Education Bureau, 2012). The system is divided into three categories of national universities, public universities, and private universities (Higher Education Bureau, 2012). National universities were originally created and run by MEXT until the National University Corporation act of 2004 while public universities are run by local government entities and private universities are run by corporations (Higher Education Bureau, 2012). National universities are mandated to improve and aid the development of Japanese higher education and research while public universities are focused

on higher education to its local community (Higher Education Bureau, 2012). A unique aspect of the Japanese higher education system is that 80% of the universities are private which each operate uniquely based on their founding principles (Higher Education Bureau, 2012). Furthermore, private universities receive subsidies for operating costs which include research, teaching and administration costs while also providing tax subsidies and specific loan program (Higher Education Bureau, 2012). The national higher education context of Japan reflects the national agenda ideology through the National University Corporation Act as the government politically tried to hide its control over national universities and the government subsidy of both private and public universities. In this way the government controls universities through their annual budget.

UT's Governance Structure

UT's governance mandate reflects the university as an instrument of national political agenda through the National University Corporation Act of 2003 and Education Act of 1947. The UT bylaws are based on these acts whereas they specify the basic organization of the university (The University of Tokyo, 2017). The university is governed by a president, board of directors, administrative council, and education and research council (Oba, 2003). The president is appointed by the Minister of Education through a proposal from a search committee consisting of members of both councils. The Minister of Education also appoints two auditors without the proposal or approval of the university (Oba, 2003). They audit all functions of the university and

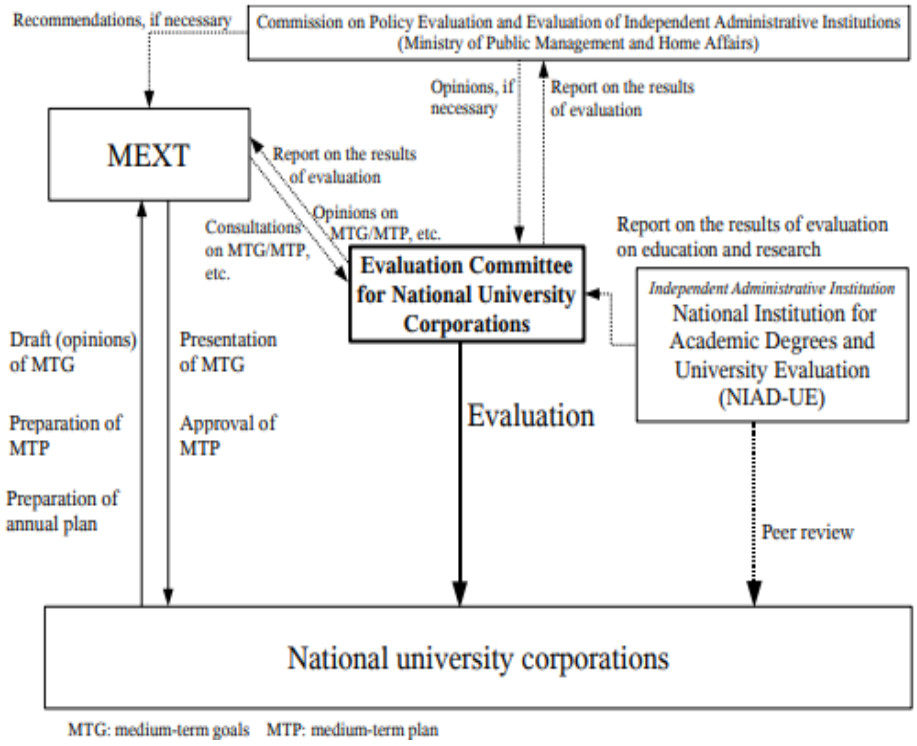

Figure 3 UT and MEXT Medium Term & Goal Chart Source: Oba, 2003

can give recommendations to the Minister of Education or the university president (Oba, 2003). The board of directors consists of the president and appointed executives of the president (Oba, 2003). The president must consult the board on matters that need endorsement from the Minister of Education, Culture, sports, Science, and Technology (Oba, 2003). The Administrative Council has power administrative issues and is chaired by the president and consists of half directors/faculty members and the other half members outside of the university that must be approved by the Education and Research Council (The University of Tokyo, 2019b). The Education and Research Council is concerned with all academic issues of the university and is chaired by the president and consists of directors nominated by the president, deans of the graduate schools, directors of institutes, and a professor from each faculty (The University of Tokyo, 2019c). Figure 3 shows the governance structure between the university and the ministry of education and shows how both the medium-term goals and budget must be approved through the ministry (Oba, 2003). The goals are divided into three categories pertaining to education, research, and other (cooperation with society, university hospital, and primary/secondary schools) (Oba, 2003). These goals are also consulted by the Evaluation committee which was setup as a part of the National University Corporation Act. As seen in Figure 5 there is a consultation process where the goals turn into the medium-term plan. The plan is then evaluated through an independent government evaluation institution (NIAD-UE) in coordination with the evaluation committee and The Commission on Policy Evaluation of Independent Administrative Institutions. In these ways, the government has direct control of the university governance through the creation of goals, plans, and evaluations which guide the national agenda in research and education.

3 Chapter Three: Literature Review and Analytical Framework

3.1 Introduction

This study builds on past research in university governance with a specific focus on productivity and differing national contexts. The literature review will summarize the relevant literature and set the stage for the analytical framework. The review is separated into six sections that form a cohesive basis for this study. The first section will examine NPM in each relevant national context followed by the critiques of this mass adherence especially in relation to NPM-inspired reforms. Next will Clark's (1983) division of the university will be summarized that gives the basis for international comparison of higher education systems. Next Olsen's models of university governance will be explained. Lastly the analytical framework developed by Maassen and Olsen on the national filters of university governance will be presented along with the indicators used to compare the chosen universities.

3.2 STJU Rankings and International Competition

University rankings follow somewhat of a similar history as NPM through the unregulated university system in the US. The first reputational rankings were commissioned by the North Central Accrediting Association in 1925 of graduate level degree programs in the US (Dill, 2009). This began the production of league tables, which was continued by the National Research Council in 1982 (a private nonprofit organization set up by a congressional charter to advise the government on science, technology, and health policy) and complemented by the first commercial US league table by US News and World Report (USNWR) in 1983 (Dill, 2009). League tables proliferated after in Canada, UK, Australia, Europe, and Asia, to set the stage for international rankings (Dill, 2009).

The STJU rankings were first published in 2003 to gauge the level of Chinese research universities (Liu & Cheng, 2011). It classifies universities that have Nobel Laureates, Fields Medals, highly cited researchers, and any significant number of articles published in Science Citation Index-Expanded or Social Science Index (Liu & Cheng, 2011). These were the first

international rankings and reflect globalization of the university sector in competing for international staff, students, and funding (Dill, 2009).

3.3 NPM and Higher Education Governance

NPM as briefly described in the introduction, is a broad term that refers to the use of private or market-oriented initiatives to reform government sponsored institutions to increase productivity. Following a free market ideology private sector management styles and competition-based reforms are encouraged. These reforms were a reaction to the expansion of the welfare state and were implemented at varying times after the early 1980's (Hood, 1991). In respects to higher education governance. Due to the different timing of the adoption of NPM reforms it is relevant to this study to understand these differences in respect to the represented countries of the chosen universities.

3.3.1 The US Higher Education System and NPM

Market instruments like competition have always been a part of US higher education due to education not being a part of the constitution (Dill, 2007). This unregulated system created a proliferation of both private and public higher education institutions of high variety of quality (Dill, 2007). This system continued to evolve with shifting from federal grants for institutions to student grants and loans to encourage competition between universities in the 1970s and with performance-based funding through competitive research grants (Dill, 2007).

3.3.2 The Swiss Higher Education System and NPM

Switzerland follows much of continental Europe as it began higher education in the mid 1990's with NPM influenced reforms. Both the national governance system and the federal funding structure were reformed to increase competition between institutions (Lepori & Fumasoli, 2010). In addition, the government decreased its direct intervention in the institutions which encouraged an increase in internal governance structures and creation of institutional strategies (Lepori & Fumasoli, 2010).

3.3.3 The Japanese Higher Education System and NPM

The Japanese higher education system reflects the country's history of isolation and making anything that is foreign a uniquely Japanese flavor. As far as higher education and NPM reforms, this is also the case in connection with the Japanese economic recession and over all deregulation that followed in the 1980s and 1990s to increase marketization (Amano & Poole, 2005). As in Switzerland, the government reduced its direct control which increased internal governance in universities. This made them resemble more of a nonprofit organization competing for funding from the government in forms of research grants and through students in tuition fees and government subsidies based on enrollment (Amano & Poole, 2005). As UT is a national university some of these reforms weren't brought to fruition until 2004 through the previously mentioned National University Corporation Act in which the national universities were separated from the ministry of education and given increased autonomy but also increased competition (Yamamoto, 2004).

3.4 The Dilemmas of NPM Policies

NPM has taken various forms in university governance with a combination of top-down national/international policies and university level governance reform. Larsen et. al. (2009) examined four basic dilemmas with university governance reform in Europe. This research frames how NPM-inspired policies challenged the historic university structure and created dilemmas related to representative democracy vs. organizational effectiveness, integrated vs. dual management structures, external vs. internal influence on decision making, centralization vs. decentralization (Larsen et. al. 2009). Each of these dilemmas exemplify NPM ideals and show how it shifts the goals of higher education to fiscal productivity over purely academic performance in research and teaching. The authors examined the UK due to its highly developed professionalized university leadership, the Netherlands as they have shifted from a democratic to highly executive management, Austria due to its changing of universities into public corporations, and Norway due to its adherence to a balanced governance system that relies on representative democracy. These countries reflect the expansive diversity of university systems in Europe.

3.5 Convergence in NPM Policymaking and Divergence in Outcomes

The effects of NPM policies have been varied depending on the governance systems in place and the funding structure. Work by Gornitzka & Maassen (2014) on the convergence of NPM inspired reforms in Europe found that there was a divergence in the outcomes of these policies based on differences found in the respective higher education systems. Another study further exemplified this find by analyzing university governance reforms in France and Italy. The existing norms in the system such as France's high level of control created reforms that were adapted faster where Italy's strong academic oligarchy avoided resisted changes until stricter policy was enacted (Dobbins, 2016). This study was expanded in 2017 where the effects of stronger executive structures and business-like activities led to student and staff protests in the Netherlands. This research also exemplifies the uniqueness of the university as an institution and how NPM policies try to make universities more like other non-profit organizations but it is difficult based on the norms and values found in universities like student and staff input on organizational governance (Gornitzka & Maassen, 2017).

3.6 NPM and University Autonomy

Autonomy or freedom can be seen in the context of the university in the degree of freedom given the university leadership in deciding its primary processes of research and teaching. Autonomy is a unique part of university governance and this also reflected historically with the lack of state control in most university systems (minus France) which resulted in high levels of real autonomy (Christensen, 2010). NPM policies have changed this through outcome-based funding and through forcing universities to look for funding from industry or patent production (Christensen, 2010). In addition, supervisory boards have been implemented to give the universities more autonomy but have been found to consist of mostly industry and former politicians which continue to reduce the universities' autonomy (Boer et. al. 2010). Autonomy has also been lost by the professoriate through more executive governance structures and increasing administrators taking over governance tasks (Shattock, 2013). Changes in autonomy can also be linked to performance of the academic staff where Brown (2001) found that there was an increase in performance when administrators took over financial and general administration tasks but there was a decrease in productivity when staff was not involved in academic decision making.

3.7 Towards Shared Governance models

With this changing governance landscape other researchers have promoted a shared governance model to ensure that the primary processes of the university are maintained especially in respects to research (Lapworth, 2004). Shattock (2002) covers the historically academically dominated governance systems and now the corporately dominated systems to show that there needs to be a balance for academic quality and fiscal responsibility. This is further developed through looking at the university as a professional services organization (both research and teaching) so shared governance through joint councils and senate committees with the executive leadership found in the US and UK is essential to maintain the provided services (Taylor, 2013). Another interesting point is brought by Stensaker & Vabø (2013) that even though the democratic based students protests were against the more hierarchical traditional governance structure, the structure is now coming back in a more executive way because of fiscal concerns. This shows the movement away from professoriate autonomy over time.

3.8 Changes in Remuneration in US Universities

Beyond the loss of autonomy for the professoriate there have also been losses in remuneration in comparison to university leadership and overall resource allocation In US universities. These changes can be linked to US universities following an economy driven ideology that follows private sector trends. In connection with the loss of autonomy, the professoriate has also lost in competition with the rise of administrators where overall budgetary resources have declined (Rhoades, 2002). Furthermore, the number of full-time professors has declined and most part time professors do not have doctoral degrees in the US (Ehrenberg, 2012). These changes coincided with a rise of the executive where their remuneration through salaries and bonuses have continued to increase. This change is apparent at UC Berkeley with increased tuition and hiring of adjunct professors (Towey, 2017). These changes in remuneration have been defended by universities due to the increased complexity of universities from an organizational standpoint and to encourage performance but this was seen to not be the case as executive compensation in US universities is statistically insignificant (Cheng, 2014). On the professoriate side, it was found that as a university's prestige increased so too did its salaries in respect to research production (Melguizo & Strober, 2007). This dichotomy is further shown through a study on research productivity, where over 50% of US public university leadership were overpaid (Pearce, 2016). This could be somewhat due to academics

in leadership roles have less time for research, but their research numbers would still grow due to being cited and continued to be published. This point is further examined through a study that showed some universities had higher research production when led by highly cited leaders (Goodall, 2009). This highlights the professionalization of leadership in higher education and the effects of corporate structures that become more business like even in paying their executives differently than staff (Galle & Walker, 2012).

3.9 In Support of NPM

There also is literature in support of a more market-oriented university system and executively run university. An Organization for Economic Co-operation and Development (OECD) report supports a more autonomous and financially stable university system to ensure the viability of universities in the future (OECD, 2014). It calls for increasing personnel in non-academic functions and uses universities from the UK as examples of more corporate structures and titles (OECD, 2014). It uses the decline in public funding for universities and the increase in capacity of universities for the main reasons to move to a more corporately run system and university structure (OECD, 2014). This connects with a study done in the US on university executive compensation compared with university football coach compensation. It finds that overall compensation for university executives is lower than football coaches even though they have broader responsibilities (Thomas & Van Horn, 2016). From a labor market perspective, the authors argue that the executives deserve more than what they receive on average especially since they stay in their positions longer than coaches (Thomas & Van Horn, 2016).

3.10 Funding Mechanisms in NPM

Competitive funding is another market mechanism used in NPM policy reform and in the case of this study, competitive research funding is important to both the professoriate and the university overall. Competitive funding is supposed to increase the efficiency of research publications and allow managers to guide the research agenda. In a cross-country study of research funding systems in Europe, there were stark differences in the levels of competition between countries but no significant connection between financial incentives and research productivity (Auranen & Nieminen, 2010). This study encourages questions into the benefits of competition inside of the university system especially pertaining to research where

researchers are increasingly spending more time on grant applications than conducting research (Auranen & Nieminen, 2010). Furthermore, this research suggests that traditional aspects of academia like researcher reputation and competition for tenure are more efficient in research production than new competitive grant structures (Auranen & Nieminen, 2010). Lastly, the research gathered by the study on quality and creativity suggests that policies encouraging better multilevel communication and continuity in funding could be more effective than overall competition (Auranen & Nieminen, 2010).

3.11Basis for International University Comparison

Universities are unique organizations based on their functions and structure. To be able to compare universities it is necessary to understand how they are organized. Clark (1983) divides the university into three organizational elements: work, belief/culture, and authority. This division helps to unpack the intricacies of universities while showing how they can be compared and related to indicators used in this study.

Work represents the academic profession and its primary processes of research and teaching. It is a loosely coupled structure where it is related closer to the discipline than the organization (Clark, 1983). In this way, academics in the same field may be oriented more closely across countries than professors across the hallway from different disciplines. This unique aspect distinguishes higher education institutions from other educational institutions like primary or secondary schools. In relation to this study this understanding of work in the academic profession will be used in the analysis of role of university governing bodies and the numbers of academic and nonacademic staff.

Belief/culture are unique in universities due to their bottom-heavy structure, as it is connected to the discipline and greater academic culture. In this way, culture can differ based on its discipline. A good example can be seen in the similarities and differences between the natural science and social science disciplines where both share the academic culture of expanding and disseminating knowledge, but their research methods are in general different. Natural sciences tend to adhere to quantitative methods that seek data that can be counted and prove existing theories, whereas social sciences tend to use qualitative methods that seek data that is not easily counted but has can be used to understand human phenomena from personal perspective adding depth to the data. These cultures can be further separated through research

focused or lecture focused professors. This depends on the pure and applied disciplines and whether the professor is research-driven or lecture-driven (Clark, 1983). Belief/culture is found in the enterprise and can be stronger or weaker depending on the prestige of the university and its overall size (Clark, 1983). The belief/culture found in universities is important to the open society driven ideology as it highlights the role of the academic culture in guiding university governance in research and teaching. Moreover, it will also be used in the analysis of the role of governing bodies in university governance indicator.

Authority describes the governance of universities from both the academic and enterprise structures. Academically, the authority starts at the professor itself through authority over their research, which then is governed by the collegial authority/ departmental and the guild authority (Clark, 1983). There is a bottom-heavy focus on this authority based on the academic culture but depending on the national context, there is authority given to the individual. On the enterprise side you see the administrative structures that flow from program to department and up to university leadership and national leadership. Authority in the university organization will be used in the analysis of the authority indicator of university governance.

3.12 Analytical Framework

In the context of this study, an analytical framework will be used as a lens to view the selected universities' governance structures and national context. The work done by Maassen & Olsen on University Dynamics and European Integration provides a helpful examination of different types of university governance structures and systems. This was built using Olsen's visions of university organization and governance but focused into three dominant models (Maassen & Olsen, 2007).

3.12.1 Models of University Governance

With an understanding of how a university is organized and can be compared internationally, it is important for this study to also further explain how university governance research has developed. Four visions of university organization and governance were developed by Olsen (2007) that can amongst other things be used for categorizing different governance structures.

This categorization was built on the theoretical basis that universities are institutions and should not be used as an organizational instrument (Olsen, 2007).

Universities as Organizations

Most higher education reform agendas and debates have adhered to an instrumental view, as with NPM reforms in other state sponsored organizations (Olsen, 2007). Olsen argues that universities reflect an institution due their unique collection of rules and practices that are maintained over time even with social turnover and change (Olsen, 2007). Furthermore, these rules and behaviors have value in themselves and their effects are, to a certain degree, uncertain as to the actual worth of a bachelor's degree or research in a certain field (Olsen, 2007). The institutional perspective also explains that long-standing institutions have developed overtime and change occurs incrementally and slowly unless under performance crisis (Olsen, 2007). Lastly, as an institution, the university has a pact with its community where it provides important services but is left to self-govern or maintain the principles and culture of the institution (Olsen, 2007).

Four Visions of University Governance

With this theoretical basis, Olsen develops four visions of university organization and governance that categorize the traditional structure and its evolution and diversity. As seen in Table 1, each vision is reinforced by an ideology that shares points of autonomy and conflict. These visions represent not only the changes that have occurred over time but how the university adapts to different societal demands (Olsen, 2007). None of these visions can be found as explained but they are useful to analyze how governance changes based on the context of the university (Olsen, 2007).

***Table 1*. Four visions of university organization and governance**

***Autonomy*:** / ***Conflict*:**	University operations and dynamics are governed by *internal* factors	University operations and dynamics are governed by *environmental* factors
Actors have *shared* norms and objectives	***The University is a rule-governed community of scholars*** *Constitutive logic*: Identity based on free inquiry, truth finding, rationality and expertise. *Criteria of assessment*: Scientific quality. *Reasons for autonomy*: Constitutive principle of the University as an institution: authority to the best qualified. *Change*: Driven by the internal dynamics of science. Slow reinterpretation of institutional identity. Rapid and radical change only with performance crises.	***The University is an instrument for national political agendas*** *Constitutive logic*: Administrative: Implementing predetermined political objectives. *Criteria of assessment*: Effective and efficient achievement of national purposes. *Reasons for autonomy*: Delegated and based on relative efficiency. *Change*: Political decisions, priorities, designs as a function of elections, coalition formation and breakdowns and changing political leadership.
Actors have *conflicting* norms and objectives	***The University is a representative democracy*** *Constitutive logic*: Interest representation, elections, bargaining and majority decisions. *Criteria of assessment*: Who gets what: Accommodating internal interests. *Reasons for autonomy*: Mixed (work-place democracy, functional competence, *realpolitik*). *Change*: Depends on bargaining and conflict resolution and changes in power, interests, and alliances.	***The University is a service enterprise embedded in competitive markets*** *Constitutive logic*: Community service. Part of a system of market exchange and price systems. *Criteria of assessment*: Meeting community demands. Economy, efficiency, flexibility, survival. *Reasons for autonomy*: Responsiveness to "stakeholders" and external exigencies, survival. *Change*: Competitive selection or rational learning. Entrepreneurship and adaptation to changing circumstances and sovereign customers.

Table 1 Four Visions of University Governance Source: Olsen, 2007

The first vision, the university is a rule-governed community of scholars, is reflecting the traditional governance structure and ideology of the university. In this vision, the university reflects the Humboldtian university in which the search for truth is paramount. Research and teaching work together to further the quest of truth and an environment through individual autonomy for the professoriate (Olsen, 2007). Governance is organized through disciplinary hierarchy (tenure) where elected professors are leaders (Olsen, 2007). Outcomes are evaluated

by peer review with the discovery or expansion of truth as the main goal (Olsen, 2007). Lastly, protection and funding come from the state since society values objective knowledge that is produced through free inquiry (Olsen, 2007). This culture/belief as explained by Clark or here as constitutive logic is still prevalent in university culture overall.

The university as an instrument of national political agenda goes back to the American universities after World War II and during the Cold War where the government used federal money for research to support national interests (Olsen, 2007). In this way, the university is a part of national competition with research and teaching as a part of social and economic development (Olsen, 2007). Governance is led by politicians and therefore changes based on their platform, which is reflected in the university organization (Olsen, 2007). Research is focused on applied fields to support the political defense of wartime and also contributed to the expand in healthcare and industrial technology (Olsen, 2007). This vision is embedded to a certain extent in every research university and growing with importance of technological development and the knowledge economy.

Next, the university as a representative democracy has its roots in worldwide university protests by students calling for a voice in university governance (Olsen, 2007). In a pure form this vision represents an internally governed institution where employees and students are all represented (Olsen, 2007). Governance is organized on elections, voting and campaigning among the different groups which decides how research and teaching are carried out (Olsen, 2007). Even inside of the groups such as the professoriate equality is given priority instead of historical academic hierarchy where a tenured and untenured staff have equal voices (Olsen, 2007). De Boer & Stensaker further expound on this vision (2007) by including government, industry and other stakeholders that also would have representation in university governance.

Lastly, the university as a service enterprise embedded in competitive markets (Olsen, 2007) reflects many universities due to market-oriented policies coming from NPM. In this vision, everything in the university is seen through a market-oriented perspective, in which research and teaching are services to its customers of research funders and students (Olsen, 2007). These services are traded in a competitive market where supply and demand operate and profit is necessary to be successful (Olsen, 2007). In this respect, knowledge created is a private good to be used to gain profit instead of a public good (Olsen, 2007). Governance by the state is only through performance through competitive funding for research but the majority of funding does not come through the state, so the use of industrial and private

donors is necessary (Olsen, 2007). In this respect, the state has less control over the university but this gain in autonomy is somewhat loss in the industrial and private donors to make up the budget differences (Olsen, 2007). Internal governance reflects a business management structure where a board made up of industrial and societal members appoint leadership over elections and management is focused on fiscal goals over the creation of knowledge (Olsen, 2007). Furthermore, the professoriate is focused on its entrepreneurial worth then solely the search for truth where tenure is based more on ability to gain patents over publishing articles (Olsen, 2007).

Indicators

To analyze the university governance structures and national context of the three universities indicators will be used to see the degree to which they align with the three chosen ideologies and the impact of national context on university productivity. The factors that influence university governance are found in the left column of table 2. The table shows how these factors differ depending on the governing ideology. Three of these factors of university governance will serve as a rubric to evaluate and compare the university's governance structures. To analyze the role of the state, the indicator of state appointed university bylaws/charters will be used for each ideology. To analyze the role of governance bodies the appointment of university leadership by the state will be used to measure the link between state and institution in the national agenda driven ideology, the inclusion of external actors in university parliaments will be used to measure the arena for external and internal interests in the open society driven ideology and the assurance of economically oriented management in the economy driven ideology. The role of leaders will be analyzed by university leadership mandates and position in the administrative hierarchy as indicators for each ideology.

Model (university as…	Instrument for national authorities	Representative democracy (negotiation based)	Service company in a market
Role of governance actors and bodies	Link between state and institution	Arena for external and internal interests	Assure economically oriented management; strategic decisions about niche
Role of leader(s)	Rules/procedures manager	Politician / negotiator	CEO/Unit leader
Authority through	Formal positional authority	Resources, networks	Professional leadership authority
Role of the state	«Principal», control; steering through rules	Negotiation partner	Facilitator

Table 2: Source (Maassen, 2019)

To measure the similarities and differences found in the various national context the following indicators will be used. The university leadership will be measured by the total number and by the number of internal and external numbers , university staff will be measured by the total number and the numbers of academic/nonacademic staff, the university budget will be measured by the total budget and its sources. The indicators reflect Clark's (1983) work to understand the national differences in universities and in the context of this study will further connect these universities to the three visions of university governance while providing additional insight to the factors that influence university productivity.

4 Chapter Four: Research Design and Methodology

4.1 Introduction

As the aim of this study is to contribute to the understanding of the similarities and differences in governance structures and national contexts of three highly productive universities a comparative design will be used. This chapter will explain why the comparative design was chosen along with a discussion of validity, reliability, ethics, and generalizability.

4.2 Comparative Design

This study consists of a comparative cross-sectional mix methods design of three case universities. In general, a cross sectional design allows to analyze the variation between cases (Bryman, 2016). As the study will be looking at universities in different countries it can also be considered as a cross cultural study (Bryman, 2016). This combination of designs will enable the comparison of each university case set in the respective national context. These comparisons will examine the governance structures to see the degree of either democratic or corporate nature through using the indicators provided in the analytical framework. Mixed methods is the use of both qualitative and quantitative research methods in one study (Bryman, 2016). Qualitative methods are used to gather data that is concerned with words which is why this method will be used to analyze state and university documents such as state laws and university bylaws. In contrast, quantitative methods focus on numbers and will be used to analyze state and institutional data. Using three universities as case examples for applying the theoretical models of university governance provide the foundation for this study to see if they prove the differences in governance models. The research questions go beyond the differences in governance structures to see if the national context is a factor in the productivity of the university. Institutional data from each university was gathered to answer this question.

4.3 Unit of Analysis

According to Bryman, (2016) it can be easy to confuse the unit of analysis, but it is the focus of the study or point that is to be analyzed other than the backdrop. In the case of this study, the point of focus is the differences found in the structure, roles of their leadership, and in university governance and if it is the main factor in university performance. Therefore the unit of analysis is the 3 universities and their nations they reside.

4.4 Case Selection

As mentioned earlier the universities were chosen based on international ranking and national context. These requirements were to ensure that they were at the same level of productivity and fit into the governance types found in the analytical framework. There was flexibility as far as different countries went but the choice to pick one in Asia, Europe, and the US reflects the somewhat extremes found in university governance and also national differences. Since the STJU rankings started in 2003 each university's rankings have changed but were chosen as they are not only the closest in the 2018 rankings but have stayed in the 13-27 range (ShanghaiRanking Consultancy, 2018abc). UCSF has slowly decreased in the SJTU rankings starting at 13 in 2003 and falling to 21 in 2018 (ShanghaiRanking Consultancy, 2018a). On the other hand, ETH Zurich has risen in the rankings over time from 25 in 2003 to 19 in 2018 (ShanghaiRanking consultancy, 2018b). UT has slightly fallen in the rankings overtime with starting at 19th in 2003 and now at 22nd in 2018 (Shanghai Ranking, 2018c).

4.5 Data Collection

The main sources of data for this study were official documents and data from private and state sources. They consist of university bylaws, state education laws, organizational charts, and institutional data. I started by using these documents to link each university to the respective vision on the analytical framework. These documents will be further used in the comparative analysis of the university's governance structures and national context through indicator analysis.

As with any source of data, a set of criteria is helpful to assess the quality and appropriateness to the study. Bryman (2016) uses a set of criteria by Scott to assess documents as a source of data, where the authenticity, credibility, representativeness, and meaning of the documents are considered. Authenticity is whether the document is genuine and comes from the correct

author (Bryman, 2016). All documents in this study were found on the respective university or governmental websites or in the case of UT two articles were used to supplement the data found on its website. In either way, the documents all would have a high level of authenticity since they were created by the university themselves. Credibility is if the document is free from errors and is accurate and in the case of official documents from the state and private sources bias can be an issue (Bryman, 2016). Since most of the documents were produced by the institutions themselves there could be a level of error if the data does not present the institution in a positive manner. But the indicators used in this study are not inherently critical such as the role of the leadership or number of professors and administrators. Moreover, it helps to have sources from both government and universities to make sure the data is accurate, as the example Bryman (2016) gives of authentic authors but different point of views affected the credibility. Representativeness is concerned with if the document is typical and if it is comprehensive (Bryman, 2016). Once again, there can be a bias from both official state and private documents if they would like to hide data that isn't beneficial, this can also be a problem when only sourcing public documents as it is not possible to see if there is other data that would contradict the public data. It does help that the documents are sourced from both the state and the university to provide comparison of data and that using three cases it is possible to see if there is abnormal data variation. Lastly, meaning refers to the level of clarity in the document and if it can be understood (Bryman, 2016). In general meaning is usually not an issue for the documents used in this study, but due to that both ETH Zurich and UT do not use English as their primary language all the documents could have lower levels of clarity then their original forms.

4.6 Data Analysis

The data was analyzed in three stages using a deductive content analysis approach of documents, implying that the theory that guided the study was used to test a specific social phenomenon (Bryman, 2016), that is, the relationship between university governance structures and university performance. This approach was used in this study as university governance was a point of interest to the researcher and Olsen’s visions were relevant to research problem. According to Bryman, (2016) content analysis of documents is used to quantify content into established categories systematically that can be replicated. This approach worked well in the first stage of the analysis through examining organizational

charts, university bylaws, and leadership mandates to map the governance structure of each university and further link them to their analytical vision. The second stage used the governance indicators presented in the analytical framework as codes to organize and compare the similarities and differences in the governance structures. In the third stage, content analysis was used to code the differences found in the national context indicators and discuss how they relate to the analytical framework and overall university performance.

4.7 Reliability and Validity

Reliability and validity are important criteria considerations to make before and throughout the study to ensure best practices were upheld despite the messiness of social research. Reliability is whether the study can be replicated and especially in quantitative research if the concepts are measured in a stable way (Bryman, 2016). Validity refers to indicators and if they accurately measure the concept (Bryman, 2016). Measurement validity, internal validity, and external validity will be used to explain the steps made to ensure validity in this study.

4.7.1 Reliability

At the beginning of this study, reliability was ensured by applying the same method for the selection of each university. When developing the indicators and categories of the data, the academic supervisor was consulted to ensure inter-observer consistency where a secondary observer is used to reduce subjectivity with the data and increase consistency in decision making (Bryman, 2016). Throughout the study, notes on the procedure and decision making of the research process were kept in order that the study can be replicated in the future.

4.7.2 Validity

From the beginning of the study, measurement validity was ensured by using previous literature of governance structures to develop the indicators.. Internal validity was strengthened by using the national context indicators to have an expansive view of university productivity. Moreover, using government and university documents as sources increased validity through triangulation. Since this study only has three universities as the sample size, external validity is difficult, but if another university had similar indicator results to university governance and national context the findings would have relatively strong external validity.

4.8 Ethical Considerations

Due to the data collection from documents there are no participants that could be harmed or personal information that could be released without consent. Since the data was collected from public sources there is not a chance of private governmental or university data being released without consent. The main ethical consideration is with the use of the findings. Bryman (2016) notes that findings can be manipulated or used in an unintended way for political motives. As this study deals with governmental policies such as NPM and overall education policies, political parties could use the findings to further their political agenda through manipulation. Furthermore, this study is exploring alternative factors to productivity which could be a negative position towards NPM policies. In this case, the study was not conducted or funded by a political party or is there a bias against NPM policies for universities.

4.9 Methodological Considerations

Beyond the scope and time limitations of a master's thesis there are other methodological limitations to be consider. First, the study was limited by having three case universities a greater number of universities from the chosen countries or more universities from different countries would have expanded the data set and the findings. In addition to the sample size, the study was also limited by using document analysis, interviews, and surveys would have expanded and deepen the data for analysis. At the time of this study, there are no single database for the chosen universities and in general internationally. This forced the researcher to collect data from the respective universities and countries. Therefore, the data was not all collected from the same process and guidelines, so data quality comes into question. Institutional data comes with its own biases, especially in a time that competition is increasing even on an international level.

5 Chapter Five: Presentation and Analysis of the Findings

5.1 Introduction

In this chapter the findings of the research will be presented. To start, each university's governance structure will be compared using the indicators from the analytical framework. Next, the national context indicators will be examined and discussed. Lastly, the national context indicators will be compared in relation to the trends of each university's rankings overtime.

5.2 Comparison of Governance Structures

5.2.1 Role of State

The role of the state in each university governance structure was measured by state appointed university laws which can be translated as charters or bylaws depending on the university. This indicator was able to measure how each university aligned with its governance ideology. It was found that UT did align with its ideology as the state controls the university through rules as its university charter is written in based on national law (The University of Tokyo, 2017). ETH Zurich was also found to align with its ideology as its university bylaws are dictated by the state and require a university assembly consisting of all university stakeholders (Federal Council, 2017). UCSF aligned with its ideology of the role of the state as a facilitator through its bylaws as the state only licenses the UCSF and requires a Board of Regents, all other decision-making is placed on the university leadership (International Affairs Office, 2008) (Regents of the University of California, 2019e).

The similarities of the role of the state in the university's governance is through the state's overall governance mandate. Even though the level of intervention in university governance varies each university is authorized by the federal or state laws to educate and in various levels provide research. ETH Zurich is governed by the ministry of education which is run by the national government (Eidgenössische Technische Hochschule Zürich, 2019h). UT is similar as it is a national university and falls under the Ministry of Education at the national

level as well (Oba, 2003). In the case of UCSF, it is at the state level that universities are governed from and they exercise this power solely through appointing the Board of Regents (International Affairs Office, 2008).

Each university has a different relationship with the state as UCSF has the least amount of state involvement and ETH Zurich is in the middle and UT having the most. For UCSF, the federal government gives the governance responsibility of education to state governments where and do not directly govern any aspect of the university (International Affairs Office, 2008). ETH Zurich has more state intervention through its university bylaws dictated by the Ministry of Education (Federal Council, 2017). The role of the state is strongest in UT as the university charter is dictated by the National University Corporation Act which was created by the ministry of education (Oba, 2003).

5.2.2 Role of Governance Actors and Bodies

The role of governance actors and bodies was measured by two indicators. To measure the link between state and institution in the national agenda ideology the appointment of university leadership by the state was used as an indicator. It was found that UT has two state employees that work as auditors in the university leadership (The University of Tokyo, 2017). In both UCSF and ETH Zurich leadership positions are appointed by the state but are not direct employees of the state (Regents of the University of California, 2019e) (Eidgenössische Technische Hochschule Zürich, 2019c). To measure the arena for external and internal interests in the open society ideology and the assurance of economically oriented management in the economy ideology the inclusion of internal and external actors in the university governance was used as an indicator. It was found that ETH Zurich does include internal actors in its governance through a university assembly that includes all staff and students and advising commissions for the executive board (Eidgenössische Technische Hochschule Zürich, 2019e). In addition, external actors are included through the ETH Foundation (Eidgenössische Technische Hochschule Zürich, 2019e). UCSF was found to have an academic senate but that only is tasked with academic matters and does not include nonacademic staff (Regents of the University of California, 2019a). It was also found that the board of regents had more industry related board members than either academic or society members staff (Regents of the University of California, 2019e). UT was found to only have

academic representation on executive advising committees and external actors in university governance in its administration council (The University of Tokyo, 2019bc).

The similarities found between the role of governance actors and bodies is in the role of university councils/committees/commissions and role of external actors. In each university the executive has an advisory body which does differ in size and amount, but all consist of a variety of university members. They all have the similar role of advising the executive on all matters of the university but do not have formal powers. External actors are found in each university's governance, whereas in UCSF and ETH Zurich are found at the Board of Regents and ETH board and at UT are found in the Administrative Council. Even with this difference in level of the university governance they do have similar roles of advising on the universities connection with society and industry.

The differences found between the university's governance are in the role of the university bodies. The role of university governance bodies is the strongest in ETH Zurich, less in UCSF, and the least in UT. Formal university bodies are only found in UCSF and ETH Zurich, their structure is a little different but overall, they have the role/responsibility of academic and admission matters. This shows how the visions of both these universities share some administrative roles but more so in the education roles of the universities. The difference between these two bodies is that UCSF is strictly academic (Regents of the University of California, 2019a), where ETH Zurich's university assembly also is involved in legislative and budgetary concerns (Eidgenössische Technische Hochschule Zürich, 2019h). UT does have faculty councils for each faculty and representatives from each faculty on the Education and Research Council but does not have a separate academic body for the entire university (The University of Tokyo, 2019c).

5.2.3 Role of leader(s)

The role of leader(s) was measured by two indicators. University leadership mandate and position in the administrative hierarchy were used to measure each universities alignment to its ideology. It was found that UT's leaders' role did align with the national agenda ideology of rules/procedures manager as the president must consult the minister of education on a variety of governance issues and that leaders are subordinate to the evaluation committee (Oba, 2003). ETH Zurich's leaders were found to align with open society ideology of politician/negotiator as the executive board is mandated to work with the university assembly

while also working with the ETH Board and ETH foundation on all matters pertaining to the university and also reflects a more horizontal hierarchy (Eidgenössische Technische Hochschule Zürich, 2019a). UCSF leaders were found to align with the economy ideology of CEO through the head of the medical services is mandated as a president/CEO Regents of the University of California, 2019b) in addition to the president of the UC system and chancellor of UCSF having the mandate of responsibility over the entire university reflecting a CEO in a corporation and being at the top of the hierarchy other than the Board of Regents(Regents of the University of California, 2015).

There are similarities found in the role of leaders through their executive mandate. In each university either the chancellor or president has the highest authority for decision making in administrative and academic matters. This reflects the fact that ETH Zurich is not a perfect example of the vision of a university as a representative democracy and the effect of NPM policies in each national context. Where before, both ETH Zurich and UT's presidents had less power over decision making. It is also important to note that UCSF has another layer of executive leadership with the president of the UC system above the chancellor where in both ETH Zurich and UT the president is under either the ETH Board or the Evaluation Committee.

There are differences in the role of leaders in their relationship with other administrators/leadership and the states/society. Even with the changes made from NPM policies ETH Zurich still has a rector that is on the same administrative level as the vice presidents as seen in Figure 4. Whereas UCSF has a vice chancellor that also takes the role of provost but what is different comparatively is that academic governance still goes directly to the chancellor with some governance going to the vice chancellor and provost as seen in the Figure 1. This relationship is further shown through Figure 4 where the chair of the academic senate is on the same level as the chancellor but is separated from the governance structure and the provost.

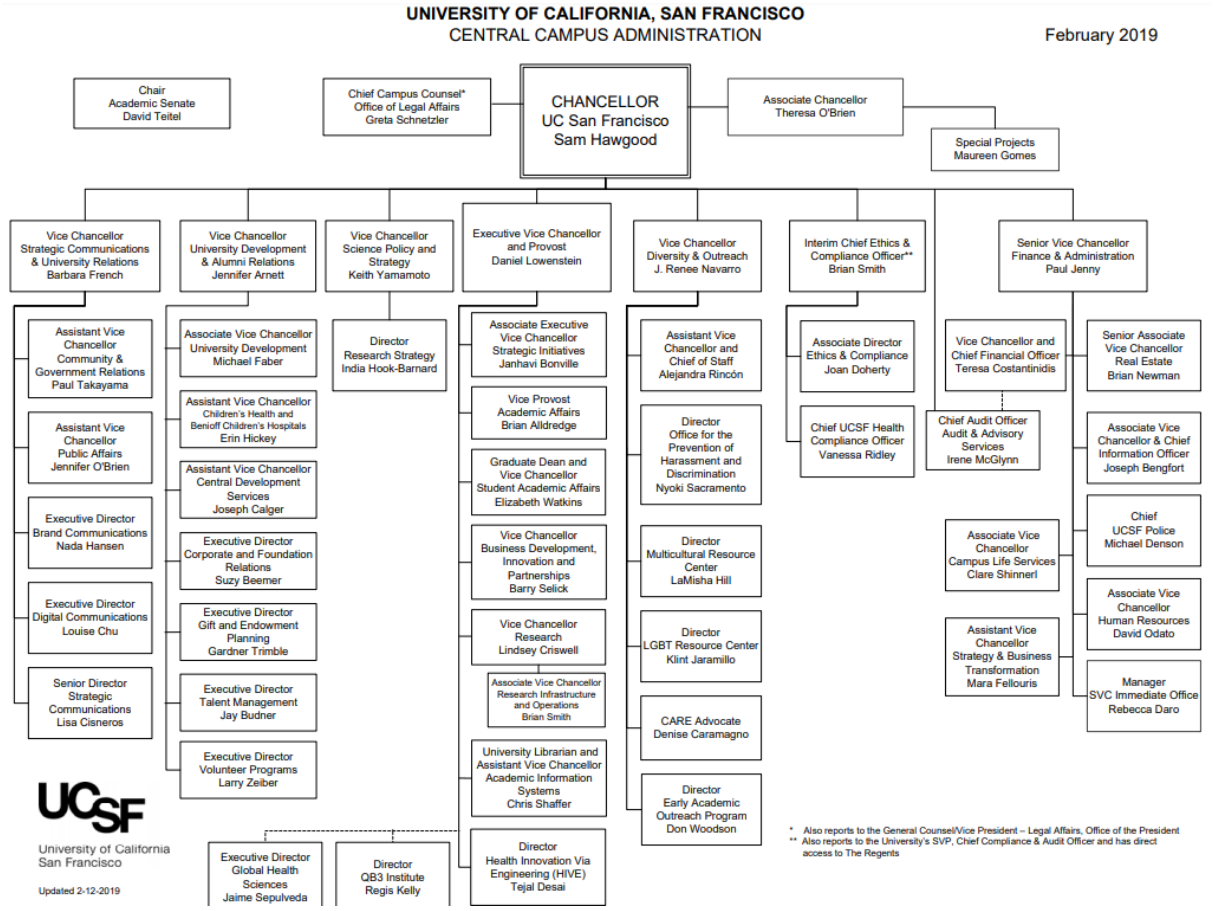

Figure 4 UC Organizational Chart Source: USCF

In the case of UT, the president only has vice presidents that are a part of the board of directors and the Administrative Council/Education and Research Council, so the president has direct authority over the academic and administrative governance. The relationship of the leaders to the state/society is also different as seen in UCSF where the chancellor can be seen more as a CEO through the autonomy given by the state and lack of funding from the state. Through the medium-term goals and plans dictated by the Minister of Education, the president of UT is more like a government bureaucrat to follow orders given by the government. There is more autonomy then there was before the University Corporation Act but there still is a stark difference in the relationship when compared to the other two leaders' roles. ETH Zurich is once again not a perfect example of a representative democracy as the leadership is appointed but compared to the other leaders there is a stronger voice of the university members through the university assembly.

5.3 National context

The national context of universities was first explored through Clark's (1983) work on higher education systems which revealed the somewhat stark differences found in parts of the university organization. As seen through the previous section the differences in governance structures outweigh the similarities. This section will compare the national context indicators of each university to see if they can better explain the productivity of the chosen universities.

5.3.1 University leadership

The leadership of the universities has both similarities and differences in size and structure. In this section, the indicators of the total number of university leadership and the number of internal and external members of the leadership were used to measure both the size and composition of the university leadership. In connection with the visions of university governance, it would be expected that UCSF would have a more concentrated power structure with more nonacademic or external members. This is true in both size and structure with UCSF having 19 leadership positions of which are more than double the vice chancellors than deans (Figure 2). This composition is further seen in the Board of Regents which of the 26 regents 14 are external industrial members (Regents of the University of California, 2019e). ETH Zurich has 14 leadership positions where there are 8 in the presidency and 5 in the rectorship (Figure 3). This also follows the vision of a representative democracy in a more balanced governance structure between administration and academia. The ETH Board is made up of 10 members of which it is half academia and half industry members (ETH-Rat, 2019b). In the case of UT there are 17 members of the executive staff of which two are government comptrollers/auditors, 7 executive vice presidents, and 7 associate managing directors (The University of Tokyo, 2018a). As the other universities also reflect their vision so does UT through the government comptrollers/auditors in the leadership but it's also interesting to point out there are no deans in direct representation. As mentioned before the deans of the graduate schools are represented in the Education and Research Council but are not specifically a part of the university organizational chart. Looking above UT's leadership the National University Corporation Evaluation Committee has 20 members of which 9 are academic and 11 are external members (Ministry of Education, Culture, Sports, Science and Technology, 2019). There are two members that are unique compared to the other university's above university leadership in a lawyer and an accountant (Ministry of Education, Culture, Sports, Science and Technology, 2019). This further reflects the vision of the university as an

instrument for national political agenda as this committee is set up by the government to audit and examine the university.

5.3.2 University Staff

There are similarities and differences in university staff found in university academic and non-academic staff which also reflects the national context of the universities. In this section the number of academic and non-academic staff were used as indicators to measure the university staff. The number of academic staff is similar with UCSF: 7,337, ETH Zurich: 7,951, and UT: 5881 (This makes sense in the context of this study as their research performance is very similar. The non-academic staff is where the real differences are shown through UCSF: 19,373, ETH Zurich: 3,494, and UT: 4,778. As UCSF is mostly focused on medical services the higher amount of non-academic staff would reflect the employees of a hospital. ETH Zurich is interesting as it being the lowest number as more democratic structures tend to be less efficient and require more resources and, in this case, more staff. Consequently, UT represents the mid-range as far as non-academic staff which could be a factor of the ministry of education's higher involvement in the university administration through setting the medium term goals and plan, while also using an the Independent Administrative Institution (NIAD-UE) to provide peer review on the evaluation of the medium term plan (Figure 4). The total number of staffs is UT with 10,764, ETH Zurich with 10,824, and UCSF 26,710.

5.3.3 University Student Population

The university student populations of the chosen universities have a few similarities but is has more differences which also connects to their national context. The total number of students and composition of degree type were used as indicators to measure the university student population. USCSF has the least number of students with 3,107 students pursuing a variety of medical graduate degrees and 1,818 residents (Regents of the University of California, 2019f). ETH Zurich has 9,517 undergraduate, 7,225 masters, 4,175 doctoral students (Eidgenössische Technische Hochschule Zürich, 2019b). UT has 14,024 undergraduate, 7,893 masters, 6,492 PhD students (The University of Tokyo, 2018b). UCSF maintains its reflection of a service enterprise with low numbers of students, as medical services are the biggest part of its budget. ETH Zurich also follows its governance vision as a representative democracy

through a sliding scale from bachelors to PhD which reflects society's education needs. UT is like ETH Zurich in its sliding scale other than the greater proportion of undergraduate students and more similar amounts of masters and PhD students. These differences could be the desire of the government to increase PhD students and the higher number of undergraduate students reflects Japan's job market demands where employers tend to train new employees instead of requiring additional education.

5.3.4 University Budget

The University budget a share some similarities and differences and reflect their national context. The total university budget and its sources were used as indicators for each university's budget. UCSF has a budget of 7.07 billion USD ETH Zurich has 1.8billion USD, and UT has 2.3billion USD. For being so close in research performance UCSF's budget is more than double which can be explained through its focus on medical services. As for ETH Zurich and UT the differences could be related to UT having more staff and students.

As seen in figure 6 UCSF's biggest source of income comes from sales and services in UCSF Health (61%) where 43% comes from private contracts and 16% comes from government spending. 21% of the budget is in grants and contracts, where 15% comes from the government and 6% from private enterprise. Therefore, a total of 33% (including 2% state funding) government funding and 53% private funding make up most of the UCSF budget. Both budget items are economically driven and competitive. In this case, over half the budget is generated by its services that are not directly academically related. The next two sources of income are seen in figure 1 are clinical and educational activities and private donors, this further shows the

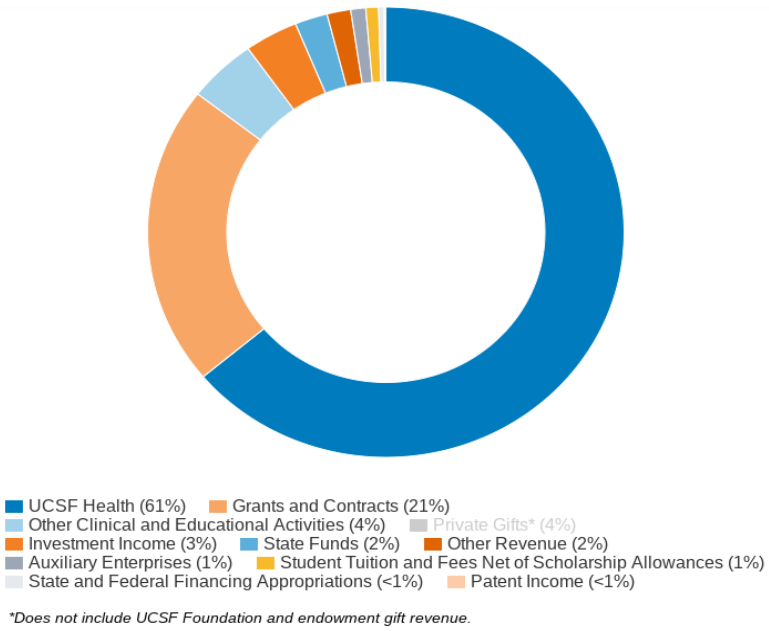

Figure 6: UCSF Budget Source: USCF

service enterprise vision in the extra activities and the importance of private donors as this is not including the UCSF foundation.

ETH Zurich has a total budget of 1.848m CHF (1.8b USD) where 1.326m CHF (1.3b USD) or 72% of funding comes from federal funding and 337M CHF (336m USD) or 18% comes from research funding. As seen in Figure 7, most of the budget is provided through federal funding which reflects the strong public foundation in this ideology. Furthermore, of the 18% research funding 9% comes from the Swiss National Science foundation which is another government mandated program and 3% from EU funding. In total, 84% of the budget comes from government funding and 6% from industry or other third-party members. Donations make up 7% which is more than double coming from self-generated revenue which reflects a small amount of marketization.

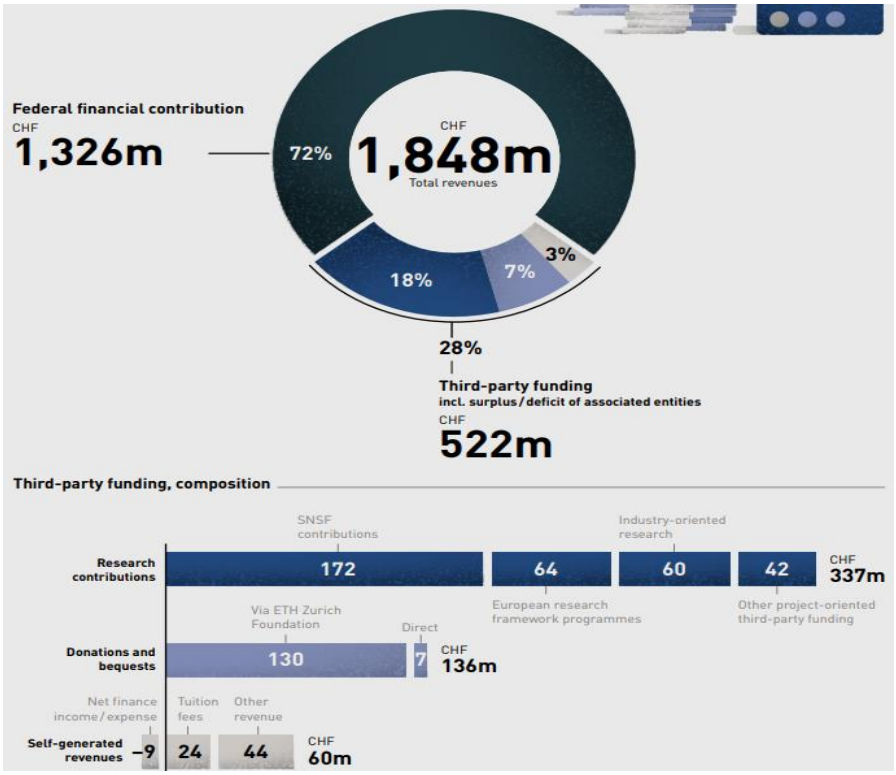

Figure 7 ETH Zurich Budget Source: ETH Zurich

The university budget of UT is 258.819m JPY (2.33b USD) with 39.3% of the budget coming from government subsidies, 34.8% from research projects and grants, and 18.6% from the university hospital. As seen in figure 8, close to 40% of the budget is subsidized through direct government subsidy funding in management and construction/maintenance subsidies. The next 35% comes from collaborative research/ endowment projects and research grants with 26% of that coming from government funding as seen in figure 9. In total 66% comes from government funding and 9% from industry. In this way the government controls the university through allocation of subsidies and research funding which does reflect the control

of the national political agenda on the university. Another interesting fact found in the budget is that student tuition makes up over 7% of the budget, and 3% coming from donations.

Budgeted Revenue for Fiscal 2018

	Amount (million yen)	%
Government Subsidies for Management Expenses	81,395	31.5
Collaborative Research and Endowment Projects	64,507	24.9
University Hospital	48,265	18.6
Research Grants	25,563	9.9
Student Tuition Fees	18,998	7.3
Subsides for Facilities Construction/Maintenance	20,091	7.8
Total	258,819	100

Figure 8 UT Budget Source: UT

		Number	Amount (million yen)
Private sector research collaboration		2,126	9,483
Grants-in-Aid for Scientific Research (*KAKENHI*)		5,168	22,948
Contracted research	Government competitive research funds	804	18,049
	Government non-competitive research funds	675	16,189
	Non-government research funds	263	826
Donations		15,515	9,268
Total		19,383	53,815

Figure 9 UT Research Funding Source: UT

5.4 Cross Comparison of National Context Indicators

To better understand the similarities and differences in the national context indicators and how they can explain the performance of the chosen universities a direct comparison of the data is helpful. If the staff and students are added together, As seen in table 3 UCSF is a university of 31,635, ETH Zurich is 32,224, and UT is 39,074. When these numbers are divided into their respective budget there is 221,273 per person at UCSF, 55,858 at ETH Zurich, and 58,862 at UT. This data is somewhat skewed for UCSF as the patients that received services are not included in this comparison but in general for the amount of research productivity the other two universities performed at a much lower budget. As these are research universities that do mix research and teaching, the student to academic staff ratio is

UCSF is .6 : 1, ETH Zurich is 2.7 : 1, and UT is 4.8 : 1. In this way, the data is also skewed to UCSF due to the low student numbers but does further show the differences found in the national context where UT is using less academic staff per student comparatively to ETH Zurich.

National Context indicator	# of University leadership	# of Academic Staff	# of Non Academic Staff	# of Students	Total Budget	Main Sources of Budget
UCSF	19 plus 26 Board of Regents	7,337	19,373	4,925	7b	61% medical services, 21% grants and contracts, 2% state funding, (33% public 53% private)
ETH Zurich	14 plus 9 ETH Board	7,951	2,873	21,400	1.8b	72% Nat. funding, 18% research funding, 7% donations, (84% public 6% private)
UT	17 plus 20 Evaluation Committee	5,881	4883	28,310	2.3b	39.3% Nat. funding, 34.8% research funding, 18.6% hos, (66% public, 9% private)

table 3 National Context Indicator Summary 2017 data: Source (The University of Tokyo, 2019d), (The Regents of the University of California, 2019b), (ETH Zurich Human Resources, 2017) Total Budget in USD

5.4.1 STJU Rankings Over Time

Since the STJU Rankings started there have been changes in each university and in relation to this study also provides some data on 15 years of university research performance of the chosen universities. Starting with UCSF, it has been a constant decline. As seen in figure 10, from the start of the rankings UCSF has moved from 13 to 21. Not counting 2003 as it seems to be an outlier, UCSF has stayed around the 17 or 18 spot until the last three years but over has seen a decrease in nine spots. Figure 11 provides some answers to the decline in performance as the managers and senior professionals have increased the greatest over this time at 220% and 268% compared to the faculty ladder rank and clinical/in residence/adjunct at 30% and 95%. In these ways not only has the academic staff grown at a slower pace but especially the ladder rank. This contrasted in the over double increase in non-academic managers further explain the decline in ranking.

Figure 10 UCSF STJU Rankings Source: ShanghaiRanking Consultancy, 2018a

ARWU	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Institutional Ranking	13	17	18	18	18	18	18	18	17	18	18	18	18	21	21	21

Headcount represents all unique employees with any earnings at UC, regardless of full-time or part-time status. Employees with more than one type of appointment are counted in their principal position (see "Notes" tab for more information).

For statistics about the effective size of UC's workforce in terms of full-time-equivalent (FTE) employees, please consult the FTE dashboard: https://www.universityofcalifornia.edu/infocenter/employee-fte

Year
Multiple values

Month
April
October

Service Focus
(All)

Personnel Type
(All)

Full time / Part time
All

Location
San Francisco

		Oct 2000	Oct 2009	Oct 2018
Academic	Faculty - Ladder-rank and Equivalent	394	435	514
	Faculty - Clinical/In-Residence/Adjunct	1,414	1,924	2,754
	Faculty - Lecturers	7	4	1
	Other Academic Employees	494	841	963
	Postdoctoral Scholars	781	825	1,138
	Medical Interns/Residents	814	1,362	1,866
	Student Teaching/Research Assistants	327	364	311
	Total	4,231	5,755	7,547
Non-Academic	Senior Management Group	20	22	16
	MSP - Managers	324	808	1,039
	MSP - Senior Professionals	442	726	1,628
	PSS - Non-Students	11,219	14,817	17,380
	Student Staff	64	64	113
	Total	12,069	16,437	20,176
Grand Total		16,300	22,192	27,723

Data Source: Corporate Personnel Data Warehouse

Figure 11 UCSF Personnel Data Source: The Regents of the University of California, 2019a

ETH Zurich is the only university of the three to increase over the 16-year ranking period. As seen in figure 12, ETH Zurich started at 25 then moving down to 27, and slowly moving up to 19. Figure 13 shows personnel data, from 2006 there has been a steady increase in scientific staff while other personnel have stayed relatively the same. This contrasts UCSF personnel data and could show that increasing certain staff can increase research performance.

Figure 12 ETH Zurich STJU Rankings Source: ShanghaiRanking Consultancy, 2018b

ARWU	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Institutional Ranking	25	27	27	27	27	24	23	23	23	23	20	19	20	19	19	19

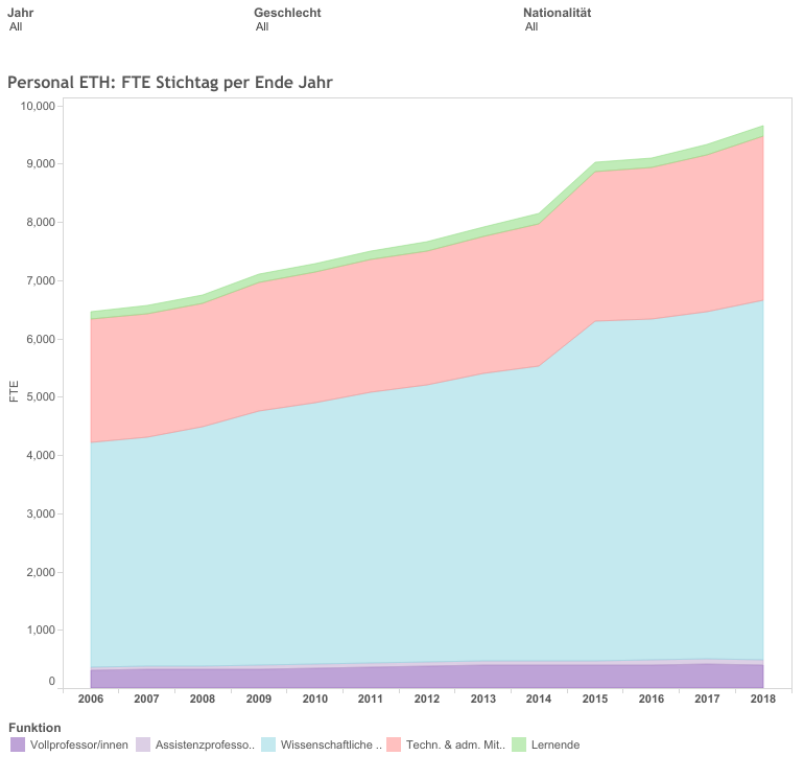

Figure 13 Personnel Data ETH Zurich Source: Eidgenössische Technische Hochschule Zürich, 2019g

Like UCSF, UT has also fallen in rank during the 16 years of the SJTU Rankings. As figure 14 shows UT has been as high as 14 and low as 24 which gives it the highest difference of rankings comparatively. It is interesting that the rankings have been around just one year before the National University Incorporation Act. Since this act was supposed to encourage university production, it is somewhat ironic that the opposite has happened. This could reflect the ineffectiveness of the National University Incorporation Act.

Figure 14 UT STJU Rankings Source: ShanghaiRanking Consultancy, 2018c

ARWU	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Institutional Ranking	19	14	20	19	20	19	20	20	21	20	21	21	21	20	24	22

This chapter has shown the similarities and differences found in the governance structures and national context of the three universities. The analytical framework revealed these differences and even found further evidence through the national context indicators. It has been shown through this analysis that the governance structures are not the main factor in creating a productive university. Even though each university is not the perfect example of each vision they do contain the elements in comparison to each other.

6 Chapter Six: Discussion, Conclusion and Recommendations

6.1 Introduction

In order to better understand the findings of this study the following chapter will analyze the findings by discussing the extent to which the findings provide answers to the study's research questions. This will be followed by an overall conclusion of the study with implications and recommendations for further research.

6.2 Discussion

6.2.1 How is the university governance structure organized?

According to the findings of this study the university governance structures of the chosen universities coincide with the three of the four visions of university governance developed by Olsen (2007). UCSF follows the university as a service enterprise embedded in a competitive market, ETH Zurich as a representative democracy, and UT as an instrument of national political agenda. The mapping of the university governance structures served the purpose of seeing how each university's governance was structured and how it could be interpreted through the study's analytical framework. The findings proved that each university did have different organization of their governance structures even though they are similar institutions as defined in Clark's (1983) work on international higher education comparison.

UCSF was found to follow the vision of university governance as service enterprise embedded in a competitive market due to its executive governance structure. In this way, UCSF's chancellor has direct power all areas of governance through direct governance over the vice chancellors for administrative matters and over academic matters with the deans. There is some shared governance with the executive vice chancellor/provost of the university but in the organizational chart the governance line goes directly to the chancellor with a horizontal line to the vice chancellor/provost. In addition, the chancellor is also head of all advisor committees that are made up of university members. This concentration of power is also shown through the UC president that is just above the chancellor and also is head of the

academic senate that governs the entire UC system's academic matters. In contrast ETH Zurich reflects the vision of university governance as representative democracy due to its shared governance structure. In this case, there is a rector who is head of the academic governance of the university who then reports to the president through the executive board. In addition, the university assembly is made of all members of the university through academic and non-academic staff, and students. The university assembly has rights of consultation on university legislative matters, budget, planning and can be given more mandates by the ETH board which presides over the two ETH institutes in Switzerland. Lastly, UT was found to reflect the vision of an instrument of national political agenda in the government's involvement in its governance structure. The most obvious example of the government's control in the university was two government auditors (comptrollers) that worked inside the university but reported to the ministry of education. As the national universities were historical a branch of the Ministry of Education their involvement has decreased to a certain extent due to the National University Corporation Act (2004) which gave them more autonomy, but their bylaws are also mandated through this act including the government auditors. Furthermore, the university is guided by medium term goals that are dictated by the Minister of Education through an extensive review process involving two other government branches. These findings set the foundation for the comparison of the structures in the next two research questions.

6.2.2 What are the main differences and similarities in university governance structures in different national contexts?

The similarities and differences in the governance structures were found through the use of four indicators taken by work from Maassen (2018) on university reform agendas. The role of the state, role of governance actors and bodies, role of leader(s), and authority through were used to compare the universities governance structures. According to the findings there were some similarities between the university but overall more differences as was expected after the findings from the previous section.

Similarities between the universities' governance structures were found in almost each indicator. In the case of these universities, the state mandates the universities and appoints the leadership. Each chosen university is a public institution, so the national or local government is involved at a varying level in its governance. This goes against the vision of a

representative democracy as election of leadership would be more accurate but as mentioned before each vision. is an ideal-type models that will not be found in a pure form in university practice Advisory committees were a similarity in governance bodies as each university had a number of these bodies to advise the leadership on all matters of the university. This similarity does reflect the visions of governance with ETH Zurich having the most advisory groups which reflects a shared governance vision. The executive mandate of the leaders was another similarity between universities as each university had one head leader responsible for the university. This makes sense in both UCSF and UT but once again does not exactly reflect a representative democracy for ETH Zurich. Lastly, there are some similarities in the authority in university governing boards/committees. The ETH Board, Board of Regents, and Evaluation Committee have the authority over monitoring productivity and budgetary concerns. They are also appointed by each universities' respective government. In this way, the universities higher governing bodies all follow a more executive structure of governance which reflect NPM reforms at ETH Zurich and UT.

There were differences found in each indicator of the university governance structures. The role of the state is different in each university as UCSF is licensed by the state but there are no further laws to guide its governance, whereas in both UT and ETH Zurich state law dictate their university governance laws. UT has more intervention by the state in its auditors and medium-term goals. Another difference is found in university bodies (assembly/senate), as ETH Zurich has the strongest body that has formal powers while UCSF is solely academic, and UT does not have a formal body. These differences further reflect the visions of governance and also interesting to see how UT's consolidated structure with only a council to advise on academic matters. The role of leaders is different due to their relationship with university leaders as seen in UCSF's chancellor having direct control over academic/administrative governance leadership and ETH Zurich having indirect control through the rector on academic governance. UT is even more direct through its direct administrative power over vice presidents and equal academic power through the Education and Research Council. In the same way, leaders differ in their role with state as UCSF chancellor is the most independent in contrast to UT's president that has government auditors on his executive board. ETH Zurich's president is in the middle of the other universities as the relationship to the state is invoked through direct power from the ETH Board but also through its mandates to the University Assembly. Lastly, there are some similarities and differences in where authority is through in the university bylaws. AS UT's bylaws dictate governance by

the Ministry of Education through the medium-term plans the authority is through the government objectives. ETH Zurich's bylaws are different as powers are given to the University Assembly. UCSF has the most freedom, but as seen in its mission, it aims to serve the community through health services.

6.2.3 How do the national contexts reflect the visions of governance and affect the performance of the university?

As seen through the previous sections the national context of each university plays a significant role in its governance. The findings showed that national context goes beyond governance to affect a variety of aspects of the university including its productivity. Five indicators were used to analyze the national context of the universities through the numbers of university leadership, students, academic and non-academic staff, and the budget and its sources.

University leadership was found to reflect the visions of governance and also play a role in productivity. The number of leadership was fairly similar between universities when combining the boards or evaluation committees. What is important to note is the composition of the leadership as found in UCSF external members to the Board of Regents were double than the university members. In contrast the ETH Board was evenly divided between internal and external members. UT was in the middle a little over half being non-academic members. These numbers do reflect their visions in a more market concern in UCSF, a shared governance in ETH Zurich and political agenda in UT through government auditing. The composition can affect research productivity as the less academic leadership members are a part of the leadership, the less focus on academic issues.

The number of students was found to reflect the visions of governance. UT has the highest number of students then ETH Zurich in the middle and UCSF with the lowest. This reflects UCSF vision of a service enterprise as once again its focus on medical services supersedes educating students. While ETH Zurich's sliding scale from more bachelors to least PhDs reflects a normal scale of university degrees in a society. UT has closer numbers of masters and PhD students which could mean that the government's political agenda sees the need for more PhDs.

Academic and non-academic was found to follow the visions of governance and also affect productivity. UCSF had the most non-academic staff which reflects its role as a medical service provider. ETH Zurich had the lowest number of non-academic staff which reflects the power of the university assembly and the rectorship to in a democratic system. UT had the most even numbers between the types of staff which could reflect the government's control on personnel or need for more staff to regulate its agenda. As far as productivity ETH Zurich leads in the ranking and has the highest ratio of academic staff to non-academic staff.

The budget and its main sources were found to reflect the visions of governance and also affect university productivity. UCSF followed its vision of governance as its main budget source is medical services, where ETH also followed this through the highest amount coming from public sources. UT's budget sources also followed its governance vision with the budget that was the most controlled by the government through allocation of funds for different functions. As far as productivity UCSF's budget was the biggest by over double (7b) followed by closer budgets of UT (2.3b) and ETH Zurich (1.8b). These numbers do reflect the general sizes of the institutions but as seen in the rankings, ETH is the highest while having the lowest budget.

The cross comparison of national context indicators was found to not reflect the visions of governance and affect university productivity. When comparing the total budget with the sum of university members, ETH Zurich spent the least per person which does make it the most efficient university especially when it is the highest ranked. When comparing student to teacher ratios, not surprisingly UCSF has the lowest ratio, but this is also impressive with ETH Zurich as it also has a lower ratio of academic staff to students and is still more productive. It would make more sense that the university with the highest ratio would be more productive as the academic staff could spend more time doing research.

The comparison of national context indicators and the 16 years of STJU Rankings found that it does affect university productivity. UCSF's downward ranking could be made sense of its increase of non-academic managers over academic staff as they increased at over the double rate compared to faculty (figure 9). In contrast, ETH Zurich has increased its scientific staff at a higher rate than any other personnel as seen in figure 11. Lastly, UT has also fallen in rankings over time which is interesting in respect to its National University Corporation Act put into law in the second year of the rankings. As these NPM reforms were meant to increase productivity, it has clearly not had this result.

6.3 Conclusion

NPM policy reforms have been used in a variety of government agencies to increase efficiency through market mechanisms. There have been promising results in utilities and social services but the effects on universities have been mixed. NPM reforms tend to increase competition for funding, students, and staff and favor executive or corporate business governance structures. These reforms are best reflected from universities in more market driven economies such as the US and UK where they have developed strong executive governance structures. These reforms were further reinforced with US and UK universities dominating the top of the STJU rankings as the most research productive. When looking at the STJU Rankings it is evident that there are universities which are also productive but are not from the dominating countries and have different governance structures. Therefore, this study wanted to see if the governance structures were different and if so, what then were the main factors affecting university productivity. UCSF, ZTH Zurich, and UT were chosen as case universities due to their governance structure and national context differences.

These universities were analyzed using a framework from Olsen (2007) that focuses on four different visions of university governance. Data was collected through document analysis of institutional charts, documents, and internal databases. Using indicators of the role of the state, role of governance actors and bodies, role of leader (s), and where authority was through each university was compared to the vision of governance and each other. The findings show that the governance structures are different as UCSF follows the vision of university governance as a service enterprise embedded in a competitive market, ETH Zurich follows the vision of university governance as a representative democracy, and UT as an instrument of national political agenda. This showed that governance structure is not the main factor in university productivity and that other factors must be at play.

The next section compared national context indicators of the universities and found that the national context also reflects the vision of university governance and is a factor in university production. ETH Zurich had the highest amount of academic university leadership and also has continued to increase in the STJU rankings. In a similar fashion, ETH Zurich also had the highest ratio of academic staff to non-academic staff which could also reflect its increase in rankings overtime. Also, when cross comparing the indicators ETH Zurich and UT are equally productive with UCSF even with lower budgets and academic staff. Furthermore,

increasing in non-academic staff at UCSF and increases in scientific staff could be related to the decrease in UCSF's ranking over the 16 years of STJU Rankings and the increase of ETH Zurich's ranking during the same time period. Lastly, UT has also decreased in the STJU Rankings over the 16 years even with the NPM inspired National University Corporation Act being implemented 15 of those years.

6.4 Implications

As universities and nations continue to compete internationally for staff and students, university productivity is important for both institutional success and socio-economic success of the nation. This study has implications for the universities involved and the policies that govern them. Fairly basic findings of these study such as increasing academic staff and academic governance could be simple changes to increase productivity at UCSF and UT. Modeling the NPM reforms of Switzerland, where there is more autonomy of the university without over controlling budgetary line items as in UT could be a way of increasing productivity as well.

This study could have some implications for universities that have a similar governance structure and national context as any of the universities. This would be especially relevant if they also had a similar ranking trajectory like UCSF or UT. In this way, university or state governance could reform their policies after ETH Zurich's example as well.

6.5 Recommendations

In order to open up the debate of productive forms of university governance, this study focused on looking beyond university governance structures for factors of productivity in their national or local context. As the university is a complex and diverse organization a one size fits all governance model would not appear to be the best solution. In this way, further study on factors that encourage university productivity would widen the debate and give university and government policy makers more options to increase their universities productivity. Research on equally productive universities from different national contexts could reveal additional national context factors that encourage or discourage productivity. Even inside these same universities a study using different national context indicators such as leadership salaries and staff salaries could further show where budgetary changes could be

made. Student graduation and dropout rates could also be beneficial indicators to go beyond just research as a gauge of productivity. Similarly, other ranking systems could be used to analyze quality of teaching or the degree of internationalization in comparison with research productivity.

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