

tions. Specifically, the universities must *license* their federally funded inventions, since they are prohibited from *assigning* any rights to any for-profit entity.<sup>14</sup> The prohibition on assignments relates to the general idea that the university should do as much as possible to ensure that an invention is serving the public, and by transferring ownership, the university would lose control over the practicing of the invention.<sup>15</sup>

## B. History of the Bayh-Dole Act

To understand the rationale for the provisions of Bayh-Dole and the consequences of the Act, a brief history of the university technology transfer system and other relevant circumstances leading to the passing of this Act is instructive.

### 1. Historical Characteristics of the United States Higher Education System

R&D originating from universities in the U.S. carries many characteristics unique from the systems of other countries. The pathway to such distinct innovation has its roots in the early twentieth century. The U.S. university system enrolled a larger fraction of eighteen to twenty-two year olds than any European nation from 1900 onwards.<sup>16</sup> The most developed European countries did not reach this level until the 1960s, at which point the U.S. already had nearly half of this age group attending a higher-level institution.<sup>17</sup>

Included in many universities' curricula was a vast amount of specialized engineering coursework, often specifically tailored to the needs of a certain region.<sup>18</sup> The ability for students and researchers to work on projects that could contribute to a local interest and solve practical problems was an automatic incentive to innovate and a costless motivational tool.<sup>19</sup>

The U.S. higher education system can be further distinguished from other countries with respect to its unified and competitive national market for faculty.<sup>20</sup> Euro-

14 See 35 U.S.C. § 202(c)(7)(a) (2009). This policy behind this provision underlines an expectation of the government for the university to retain certain control over the invention, which is complicated by the *Stanford v. Roche* decision and discussed in Chapter V-B-4-b, *infra*. For definitions of licenses and assignments, see note 8, *supra*.

15 However, an exclusive license is permitted, so long as the title remains with the university. See Kettner and Decker, *supra* note 6 at 15.

16 See Mowery, *supra* note 5, at 18.

17 See *id.* at 11.

18 See *id.* at 12.

19 See *id.* at 14.

20 See *id.* at 13.

pean universities tended to appoint their own graduates to faculty positions, and rarely recruited from outside. Conversely, American universities recruited faculty from numerous sources and maintained a competitive marketplace.<sup>21</sup> This increased mobility motivated researchers to seek commercial applications for inventions and allowed for the diffusion of new ideas and novel research approaches.<sup>22</sup>

## 2. The Growth of Federal Funding on Academic Research

The priorities of the federal government with respect to general R&D shifted once the U.S. entered into World War II, and these expenditures increased fifteen-fold between 1940 and 1945.<sup>23</sup>

The renewed interest in R&D during the war incentivized the government to augment its focus on university grants, since university researchers included some of the brightest and most innovative minds in the country. Between 1935 and 1960, the overall academic research enterprise increased nearly six-fold.<sup>24</sup> The federal grant money was used to support broad explorations of uncertain technologies and growth areas, which ultimately led to major breakthroughs in previously under-researched areas, including biomedical and aeronautical engineering.<sup>25</sup>

## 3. University Patenting and Patent Policy Trends Prior to Bayh-Dole

While some universities began to patent faculty inventions as early as the 1920s, formal patent policies were mostly a product of the post World War II era.<sup>26</sup> Considerable and steady growth of patenting by universities was seen in the 1970s and in the years leading to the passing of Bayh-Dole.

A sea change in invention management occurred in the two decades leading to Bayh-Dole.<sup>27</sup> Pursuant to this transformation, many U.S. universities began not only to seek patents for faculty inventions, but also to manage their patent and licensing activities.<sup>28</sup> Since the government retained title to federally-funded in-

21 See Hugh Davis Graham and Nancy Diamond, *THE RISE OF AMERICAN RESEARCH UNIVERSITIES*, (Baltimore: Johns Hopkins University Press, 1997) at 20.

22 See Mowery, *supra* note 5 at 13.

23 See *id.* at 22.

24 *Id.* at 23.

25 *Id.* at 26.

26 *Id.* at 35.

27 *Id.* at 44. This change was led by the creation of the Research Corporation, which administered inventions for over 200 institutions in 1970. The corporation encouraged and assisted universities in managing early stage technology transfer. See *id.*

28 *Id.*, citing C. Weiner, *Universities, Professors and Patents: A Continuing Controversy*, *TECH. REV.* 83 at 33-43.